

CURRENT



Electric Bike User Manual



FULLY CHARGE BATTERIES BEFORE FIRST USE - Batteries should be fully charged immediately when they are received and immediately after each use for the recommended charge times (see below).

- Li-Ion (Lithium Ion) batteries 4-6 hours

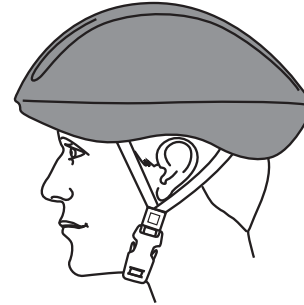
With proper care and maintenance your American Cycle Company® "Current" Electric Bicycle will provide ease of use and be fun to ride. Below are points that will help you to maximize the enjoyment you get from your new hybrid electric bicycle.

FACTORS TO MAXIMIZE THE RANGE OF YOUR ELECTRIC BICYCLE

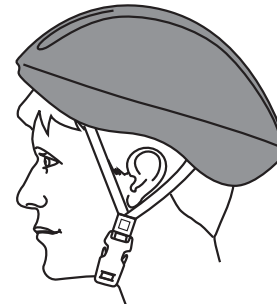
- **RIDER INPUT** - the more the rider pedals the further the distance traveled. Continuous riding, as opposed to frequent stopping and starting, will yield the greatest range possible
- **ELEVATION GAIN** - the flatter the road the further the distance traveled
- **WEATHER** - cold weather can adversely affect the battery capacity
- **WIND** - traveling with a tailwind will increase distance traveled, traveling into a headwind will decrease distance traveled
- **TERRAIN** - the smoother the terrain (roadways vs. fireroads, etc.) the further the distance traveled
- **RIDER WEIGHT** - the lighter the rider, resulting in less drain on the batteries, the further distance traveled
- **BICYCLE MAINTENANCE** - a properly maintained bicycle will yield the greatest range possible
- **TIRE PRESSURE** - properly inflated tires have less rolling resistance and will be easier to pedal
- **BATTERIES** - properly charged and maintained batteries will yield the greatest range possible. Batteries stored in cold areas (below 50 degrees Fahrenheit / 10 degrees Celsius) will show reduced range. Never allow batteries to freeze (below 32° Fahrenheit) as this will result in permanent damage to them. Batteries that have not been kept in optimum condition will show reduced range and run time.

HELMETS SAVE LIVES !!!

- ALWAYS WEAR A PROPERLY FITTED HELMET WHEN YOU RIDE YOUR BICYCLE.
- DO NOT RIDE AT NIGHT.
- CPSC RECORDS SHOW THAT ABOUT 35% OF BICYCLE RELATED DEATHS OCCUR AFTER DARK.
- AVOID RIDING IN WET CONDITIONS.
- CPSC RECORDS SHOW THAT ABOUT 65% OF INJURIES HAPPEN TO CHILDREN UNDER 15 YEARS OF AGE.
- RIDE ONLY WITH ADULT SUPERVISION



CORRECT FITTING - MAKE SURE YOUR HELMET COVERS YOUR FOREHEAD.



INCORRECT FITTING. FOREHEAD IS EXPOSED AND VULNERABLE TO SERIOUS INJURY.

The following manual is only a guide to assist you and is not a complete or comprehensive manual of all aspects of maintaining and repairing your bicycle. The bicycle you have purchased is a complex object. We recommend that you consult a bicycle repair specialist if you have doubts or concerns as to your experience or ability to properly assemble, repair, or maintain your bicycle.





PART 1 Before You Ride.5-14



PART 2 Tools & Electronic Component Overview.15-24



PART 2 Bike Assembly.25-46



PART 3 Maintenance.47-74



PART 4 Troubleshooting75-79



Warning / Important - Take notice of this symbol throughout this manual and pay particular attention to the instructions blocked off and preceded by this symbol.

BEFORE YOU RIDE

ABOUT THIS MANUAL

It is important for you to understand your new bicycle. By reading this manual before you go out on your first ride, you'll know how to get better performance, comfort, and enjoyment from your new bicycle.

It is also important that your first ride on your new bicycle is taken in a controlled environment, away from cars, obstacles, and other cyclists.

GENERAL WARNING

Bicycling can be a hazardous activity even under the best of circumstances. Proper maintenance of your bicycle is your responsibility as it helps reduce the risk of injury. This manual contains many "Warnings" and "Cautions" concerning the consequences of failure to maintain or inspect your bicycle. Many of the warnings and cautions say "you may lose control and fall." Because any fall can result in serious injury or even death, we do not repeat the warning of possible injury or death whenever the risk of falling is mentioned.

A SPECIAL NOTE FOR PARENTS

It is a tragic fact that most bicycle accidents involve children. As a parent or guardian, you bear the responsibility for the activities and safety of your minor child. Among these responsibilities are to make sure that the bicycle which your child is riding is properly fitted to the child; that it is in good repair and safe operating condition; that you and your child have learned, understand and obey not only the applicable local motor vehicle, bicycle, and traffic laws, but also the common sense rules of safe and responsible bicycling. As a parent, you should read this manual before letting your child ride the bicycle. Please make sure that your child always wears an ANSI, ASTM, SNELL approved bicycle helmet when riding.

CORRECT FRAME SIZE

When selecting a new bicycle, the correct choice of frame size is a very important safety consideration. Most full sized bicycles come in a range of frame sizes. These sizes usually refer to the distance between the center of the bottom bracket and the top of the frame seat tube.

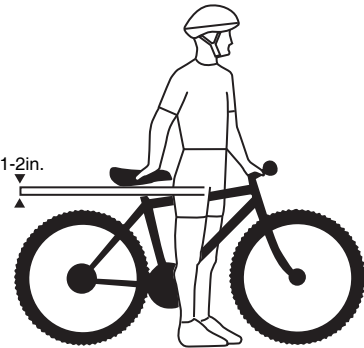


For safe and comfortable riding there should be clearance of no less than 1 - 2 inches between the groin area of the intended rider and the top tube of the bicycle frame, while the rider straddles the bicycle with both feet flat on the ground.

The ideal clearance will vary between types of bicycles and rider preference. This makes straddling the frame when off the seat easier and safer in situations such as sudden traffic stops. Women can use a men's style bicycle to determine the correct size women's model.

The following chart and diagram will help you make the correct choice. Rider leg length refers to approximate pant inseam.

Frame Sizing Guide



Approximate Rider Leg Length	Suggested Frame Size for Racing/Touring Bicycle	Suggested frame Size for Mountain, Hybrid, Comfort, or Cruiser Bicycle
61-69cm / 24-27 inches	-	37cm / 14.5 inches
66-76cm / 26-30 inches	-	43cm / 17 inches
71-79cm / 28-31 inches	50cm / 19.5 inches	45cm / 18 inches
76-84cm / 30-33 inches	55cm / 21.5 inches	50cm / 19.5 inches
79-86cm / 31-34 inches	57cm / 22.5 inches	52cm / 20.5 inches
81-89cm / 32-35 Inches	60cm / 23.5 Inches	53-56cm / 21-22 Inches
86-94cm / 34-37 inches	63cm / 25 inches	58-60cm / 23-23.5 inches

SAFETY CHECKLIST

Before every ride, it is important to carry out the following safety checks:



1. Brakes

- Ensure front and rear brakes work properly.
- Ensure brake shoe pads are not over worn and are correctly positioned in relation to the rims.
- Ensure brake control cables are lubricated, correctly adjusted and display no obvious wear.
- Ensure brake control levers are lubricated and tightly secured to the handlebar.



2. Wheels and Tires

- Ensure tires are inflated to within the recommended limit as displayed on the tire sidewall.
- Ensure tires have tread and have no bulges or excessive wear.
- Ensure rims run true and have no obvious wobbles or kinks.
- Ensure all wheel spokes are tight and not broken.
- Check that axle nuts are tight. If your bicycle is fitted with quick release axles, make sure locking levers are correctly tensioned and in the closed position.



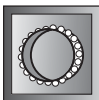
3. Steering

- Ensure handlebar and stem are correctly adjusted and tightened, and allow proper steering.
- Ensure that the handlebars are set correctly in relation to the forks and the direction of travel.
- Check that the headset locking mechanism is properly adjusted and tightened.
- If the bicycle is fitted with handlebar end extensions, ensure they are properly positioned and tightened.



4. Chain

- Ensure chain is oiled, clean and runs smoothly.
- Extra care is required in wet or dusty conditions.



5. Bearings

- Ensure all bearings are lubricated, run freely and display no excess movement, grinding or rattling.
- Check headset, wheel bearings, pedal bearings and bottom bracket bearings.



6. Cranks and Pedals

- Ensure pedals are securely tightened to the cranks.
- Ensure cranks are securely tightened to the axle and are not bent.



7. Derailleurs

- Check that front and rear mechanisms are adjusted and function properly.
- Ensure shift and brake levers are attached to the handlebar, shift and brake.
- Ensure derailleurs, shift levers and shift and brake cables are properly lubricated.



8. Frame and Fork

- Check that the frame and fork are not bent or broken.
- If either are bent or broken, they should be replaced.



9. Accessories

- Ensure that all reflectors are properly fitted and not obscured.
- Ensure all other fittings on the bike are properly and securely fastened, and functioning.
- Ensure the rider is wearing a helmet.



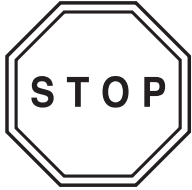
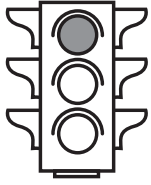
10. Motor Drive Assembly and Throttle

- Ensure all motor drive components are correctly mounted and functioning properly.



11. Battery Pack

- Ensure the batteries are in good operation condition and kept fully charged.



RIDING SAFELY

General Rules

When riding obey the same road laws as all other road vehicles, including giving way to pedestrians, and stopping at red lights and stop signs.

For further information, contact the Road Traffic Authority, police department or Department of Motor Vehicles in your State.

Ride predictably and in a straight line. Never ride against traffic.

Use correct hand signals to indicate turning or stopping.

Ride defensively. To other road users, you may be hard to see.

Concentrate on the path ahead. Avoid pot holes, gravel, wet road markings, oil, curbs, speed bumps, drain grates and other obstacles.

Cross train tracks at a 90 degree angle or walk your bicycle across.

Expect the unexpected such as opening car doors or cars backing out of concealed driveways.

Be extra careful at intersections and when preparing to pass other vehicles.

Familiarize yourself with all the bicycle's features. Practice gear shifts, braking, and the use of toe clips and straps, if fitted.

If you are wearing loose pants, use leg clips or elastic bands to prevent them from being caught in the chain or gears. Wear proper riding attire and avoid wearing open toe shoes.

Don't carry packages or passengers that will interfere with your visibility or control of the bicycle. Don't use items that may restrict your hearing.

Do not lock up the brakes. When braking, always apply the rear brake first, then the front. The front brake is more powerful and if it is not correctly applied, you may lose control and fall.

Maintain a comfortable stopping distance from all other riders, vehicles and objects. Safe braking distances and forces are subject to the prevailing weather conditions.

Use designated bicycle paths if possible.



Wet Weather



IT IS RECOMMENDED TO NOT RIDE IN WET WEATHER This hybrid electric bicycle is not meant for use in the water (damp roads, puddles, rain, streams, etc.). Never immerse this product in water as the electrical system may be damaged.

- In wet weather you need to take extra care.
- Brake earlier, you will take up to 6 times longer distance to stop.
- Decrease your riding speed, avoid sudden braking and take corners with additional caution.
- Be more visible on the road.
- Wear reflective clothing and use safety lights.
- Potholes and slippery surfaces such as line markings and train tracks all become more hazardous and more difficult to see when wet.

Night Riding



IT IS RECOMMENDED TO NOT RIDE AT NIGHT

- Ensure bicycle is equipped with a full set of correctly positioned and clean reflectors.
- Refer to page 1 and 101 of this manual.
- Use a properly functioning lighting set comprising of a white front lamp and a red rear lamp.
- If using battery powered lights, make sure batteries are well charged.
- Some rear lights available have a flashing mechanism which enhances visibility.
- Wear reflective and light colored clothing.
- Ride at night only if necessary. Slow down and use familiar roads with street lighting, if possible.

Pedaling Technique

- Position the ball of your foot on the center of the pedal.
- When pedaling, ensure your knees are parallel to the bicycle frame.
- To absorb shock, keep your elbows slightly bent.
- Learn to operate the gears properly. (Refer to pages 26-28)

Hill Technique

- Gear down before a climb and continue gearing down as required to maintain pedaling speed.
- If you reach the lowest gear and are struggling, stand up on your pedals. You will then obtain more power from each pedal revolution.
- On the descent, use the high gears to avoid rapid pedaling.
- Do not exceed a comfortable speed; maintain control and take additional care.

Cornering Technique

Brake slightly before cornering and prepare to lean your body into the corner. Maintain the inside pedal at the 12 o'clock position and slightly point the inside knee in the direction you are turning. Keep the other leg straight, don't pedal through fast or tight corners. While going through the turn, keep your eyes parallel to the horizon and look as far ahead of you as possible.

Please refer to pages 128-130 for braking techniques and pages 130-133 for gear shifting techniques.

Rules for Children

To avoid accidents, teach children good riding skills with an emphasis on safety from an early age. Children should always be supervised by an adult.

1. Always wear a properly fitted helmet.
2. Do not play in driveways or the road.
3. Do not ride on busy streets.
4. Do not ride at night.
5. Obey all the traffic laws, especially stop signs and red lights.
6. Be aware of other road vehicles behind and nearby.
7. Before entering a street: Stop, look right, left, and right again for traffic. If there's no traffic, proceed into the roadway.
8. If riding downhill, be extra careful. Slow down using the brakes and maintain control of the steering.
9. Never take your hands off the handlebars, or your feet off the pedals when riding downhill.



The Consumer Protection Safety Commission advises that the riding of small wheel diameter bicycles at excessive speeds can lead to instability and is not recommended. Children should be made aware of all possible riding hazards and correct riding behavior before they take to the streets. Do not leave it up to trial and error.

BICYCLE CARE

Basic Maintenance

The following procedures will help you maintain your hybrid electric bicycle for years of enjoyable riding.

Properly maintain the batteries by keeping them fully charged when not in use.

Do not ride your hybrid electrical bicycle in the water (damp roads, puddles, rain, streams, etc.) and never immerse it in water as the electrical system may be damaged.

Periodically check the wiring and connectors to ensure there is no damage and the connectors had good continuity.

For painted frames, dust the surface and remove any loose dirt with a dry cloth. To clean, wipe with a damp cloth soaked in a mild detergent mixture. Dry with a cloth and polish with car or furniture wax. Use soap and water to clean plastic parts and rubber tires. Chrome plated bikes should be wiped over with a rust preventative fluid.

Store your bicycle under shelter. Avoid leaving it in the rain or exposed to corrosive materials.

Riding on the beach or in coastal areas exposes your bicycle to salt which is very corrosive. Wash your bicycle frequently and wipe or spray all unpainted parts with an anti-rust treatment. Make sure wheel rims are dry so braking performance is not affected. After rain, dry your bicycle and apply anti-rust treatment.

If the hub and bottom bracket bearings of your bicycle have been submerged in water, they should be taken out and re-greased. This will prevent accelerated bearing deterioration.

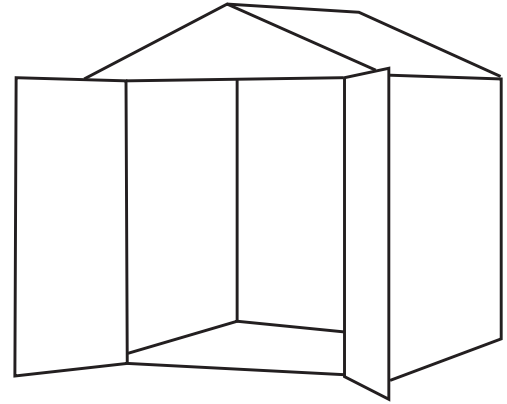
If paint has become scratched or chipped to the metal, use touch up paint to prevent rust. Clear nail polish can also be used as a preventative measure.

Regularly clean and lubricate all moving parts, tighten components and make adjustments as required. (Refer to Parts 5 and 6 of this manual for further details).

The use of alloy components and BED, SATIN and TITANIUM surface treatments minimizes the number of places where rust can surface.

Storage

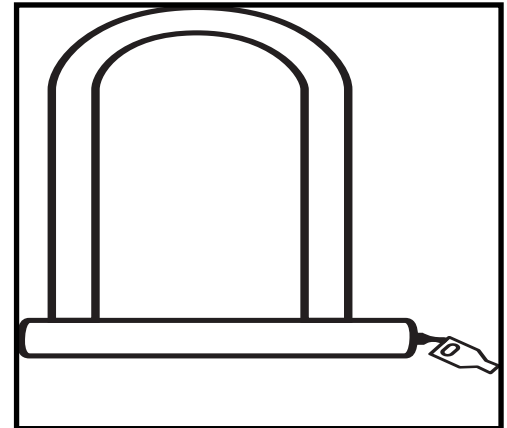
Keep your bicycle in a dry location away from the weather and the sun. Direct sunlight may cause paint to fade or rubber and plastic parts to crack. Before storing your bicycle for a long period of time, clean and lubricate all components and wax the frame. Deflate the tires to half pressure and hang the bicycle off the ground. Don't cover with plastic as "sweating" will result which may cause rusting. Please notice that your bicycle warranty does not cover paint damage, rust, corrosion, dry rot or theft.

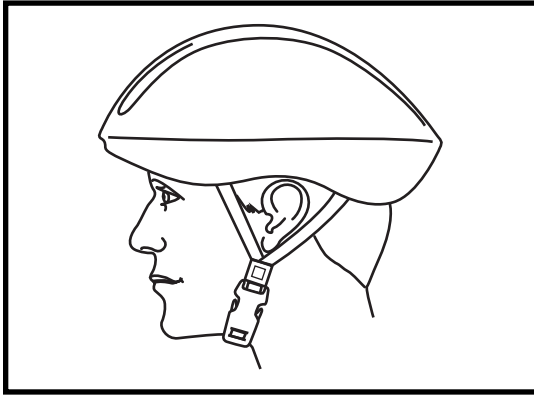


Security

It is advisable that the following steps be taken to prepare for and help prevent possible theft.

1. Maintain a record of the bicycle's serial number, generally located on the frame underneath the bottom bracket or on the head tube.
2. Register the bicycle with the local police.
3. Invest in a high quality bicycle lock that will resist hack saws and bolt cutters. Always lock your bicycle to an immovable object if it is left unattended.





Helmets

It is strongly advised that a properly fitting, ANSI or SNELL approved, bicycle safety helmet be worn at all times when riding your bicycle. In addition, if you are carrying a passenger in a child safety seat, they must also be wearing a helmet.

The correct helmet should:

- be comfortable
- be lightweight
- have good ventilation
- fit correctly
- cover forehead



Always wear a properly fitted helmet which covers the forehead when riding a bicycle. Many states require specific safety devices. It is your responsibility to familiarize yourself with the laws of the state where you ride and to comply with all applicable laws, including properly equipping yourself and your bike as the law requires. Reflectors are important safety devices which are designed as an integral part of your bicycle. Federal regulations require every bicycle to be equipped with front, rear, wheel, and pedal reflectors. These reflectors are designed to pick up and reflect street lights and car lights in a way that helps you to be seen and recognized as a moving bicyclist. Check reflectors and their mounting brackets regularly to make sure they are clean, straight, unbroken and securely mounted. Have your dealer replace damaged reflectors and straighten or tighten any that are bent or loose.

Your new bicycle was partially assembled in the factory and then partially disassembled for shipping. You may have purchased the bicycle already fully assembled and ready to ride OR in the shipping carton in the partially disassembled form. The following instructions will enable you to prepare your bicycle for years of enjoyable cycling. For more details on inspection, lubrication, maintenance and adjustment of any area please refer to the relevant sections in this manual. If you have questions about your ability to properly assemble this unit, please consult a qualified bicycle service specialist before riding.



Tools Included:

- Phillips head screw driver
- 5mm & 6mm Allen keys
- 13mm/15mm open end wrench

Tools Suggested (optional):

- A pair of pliers with cable cutting ability
- Adjustable wrench or a 10mm open end wrench
- Scissors



To avoid injury, this product must be properly assembled before use. If your bicycle was obtained assembled, we strongly recommend that you review the complete assembly instructions and perform checks specified in this manual before riding.

ELECTRONIC COMPONENTS

Pedal Assist Control Unit/Battery Gauge

This unit is featured on the Enlightened series of bicycles. Not only does it act like a battery gauge but it also enables the rider to vary the level of support from Low to High (1 LED = least amount of power assistance, 3 LED's = maximum amount of power assistance).

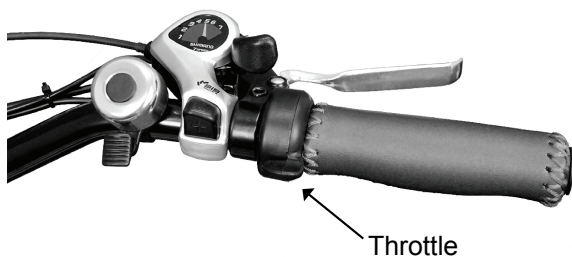
Press the "+" button to increase the amount of power assistance (Note that this will also decrease the range of the bicycle because more battery power is being used).

Press the "-" to decrease the amount of the power assistance (Note that this will also increase the range of the bicycle because less battery power is being used).

The line voltage will fluctuate depending on the instantaneous load that the motor is under. For example, when starting out from a dead stop, or going up a steep hill, the motor will be under a high load and may show a reduced number of LED's .



Pedal Assist Control Unit
with Battery Gauge

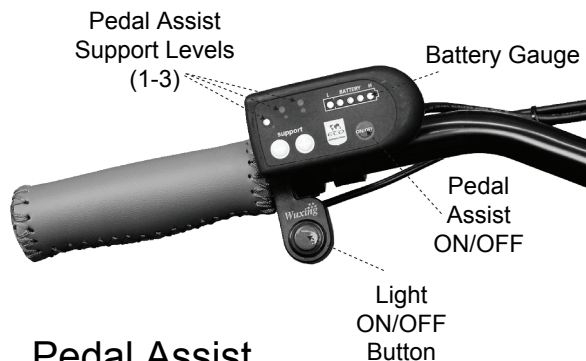


Throttles

Throttles are equipped on some models of electric bicycles. Throttles operate by rotating the throttle towards the rider much like a motorcycle. They generally are the inner half of the right side handlebar grip. The more you twist the throttle, the faster the motor system will propel the bicycle.

Twist and Go Throttle

Before you begin riding, turn the main power switch on, then start riding as you would ride any regular, non motor assisted bicycle. After you have begun to ride, slowly twist the throttle towards you. The more you twist the throttle, the more motor power will be applied to the wheels. You may feel the pedals get a “lighter” feel than riding without the motor assisting you. Once you have twisted the throttle all the way, the motor will accelerate you to its full speed of approximately 20mph (24 km/h).



Pedal Assist Control Unit

PAS (Pedal Assist System)

Using the Pedal Assist function allows the rider to have the bike match their pedaling power at three levels of support (Low, Medium, High), High giving you the most assistance. Once you start pedaling, a torque sensor picks up your movement and power integrates seamlessly while you ride. Just pedal and go. Once you use the brakes or quit pedaling, the power is deactivated and you need to pedal again (lightly) to re-activate pedal assistance.

PAS / TAG throttle switch

It is possible to be in Pedal Assist Mode and use the Throttle for an extra boost. However, this will significantly drain battery power. Note: When only using the Throttle mode you will use more battery power in general and thus shorten range of the bicycle per charge.

Taking Care of Your Batteries

Proper maintenance of the batteries will maximize their lifespan and available ride time. American Cycle Company® warrants your new batteries from the date of purchase but only if properly cared for. Refer to the limited warranty for details.

- American Cycle Company uses Li-Ion (Lithium Ion) batteries in all of our electric bicycles. These are very user friendly types of batteries when cared for properly
- Batteries should be fully charged immediately when they are received for the recommended charge times. **FULLY CHARGE BATTERIES BEFORE FIRST USE.** Below are the recommended charge times for each type of batteries.
 - Li-Ion (Lithium Ion) batteries 4-6 hours
- Charge batteries at least every 90 days until normal use is resumed.
- Always store bicycle with fully charged batteries.
- Never charge the batteries for more than 24 hours.
- Always disconnect the charger from the wall outlet and bicycle when charging is complete (as indicated by the status on the charger) before storing the bicycle.
- **Do not store batteries below 50° Fahrenheit and never allow batteries to freeze (below 32° Fahrenheit).**
- Bikes are equipped with a 5 minute sleep mode. If no activity is detected after 5 minutes the bike will go into stasis mode to conserve the batteries. To restart, cycle the power switch Off then On. **Bikes are not to be stored in the 5 minute sleep mode.**
- Always be sure to turn the bike “OFF” when not in use via the Ignition/Battery Lock. If you have left the power on or your product has not been charged for a long period of time, the batteries may reach a stage at which it will no longer hold a charge.
- Be friendly to the environment! Be sure to recycle your old batteries at a local battery recycling center. Do not throw them in the garbage!
- Frequent “stops and starts” will drain a battery more quickly than sustained, long-term use
- Even with proper care, rechargeable batteries do not last forever. Average battery life depends on use and conditions.



Electric Bikes with Seat Tube Mounted Battery (STB) Packs
- Remove the power cable from the charger port.

Battery FAQ's

Q: Do I need to charge the batteries before using them?

A: Yes, you should charge the batteries fully before first using them.

Q: Do I need to "break-in" my batteries?

A: Yes, the batteries used in the American Cycle Company Electric Bicycles will need to have a "break-in" cycle consisting of ~ three dis-charge/charge cycles before they will reach optimum performance. This involves three complete discharges and three complete recharges. After this initial "break-in" cycle the batteries will have maximum possible performance and less line voltage fluctuations under load.

Q: How long will the batteries hold their charge?

A: All batteries will self-discharge when not in use. The self-discharging rate depends on the temperature at which they are stored. Excessively cold or hot storage temperatures will drain the batteries faster than normal. Ideally the batteries should be stored at room temperature.

Q: Why should I recharge my batteries at least every 90 days when I am not using them?

A: Batteries naturally lose their charge over time. To keep the batteries in optimal condition and extend their life, it is recommended that a top-off recharge be performed at least every 90 days.

Q: What happens if I leave the power switch on longer than 5 minutes?

A: American Cycle Company bikes are equipped with a 5 minute shut-off mode. If no activity is detected after 5 minutes the bike will turn itself off to protect the batteries. To restart, cycle the power switch (OFF then ON). If you have left the power switch on or your product has not been charged for a long period of time, the batteries may reach a stage at which it will no longer hold a charge.

Q: Will I get more performance from my bike if I leave the batteries to charge longer?

A: No, once the batteries are fully charged (as indicated by the light on the charger) it is best to unplug them from the charger. Leaving the batteries charging longer than necessary is called “overcharging” and will not increase performance. The supplied chargers are designed to avoid over-charging a battery. Still we recommend that you always unplug a charger after the unit is fully charged to avoid the possibility of unanticipated circumstances such as an unexpected power surge from a lightning strike (or other power line anomaly) potentially causing damage. Only use the supplied chargers.

Q: Is it normal that the batteries get warm when recharging?

A: Yes, it is normal that the batteries will become warm to the touch during the recharging process. This is because the increase of internal resistance and less energy conversion efficiency from electric energy to chemical energy.

Q: How long will my batteries last before needing replacement?

A: Average battery life depends on use and conditions. Even with proper care, rechargeable batteries does not last forever.

Charger

The hybrid electric bicycle comes with a charger that connects with an easy-access charger port for recharging the batteries. This charger unit has lights that show the battery charge status. Refer to the instructions that appear on the charger unit and its instructions.

Batteries work best when they have a full charge, so always be sure to recharge them fully after each ride. If you leave them in a run-down condition, without recharging them, it will shorten their life expectancy.

- Li-Ion (Lithium Ion) batteries - charge for 4-6 hours for full charge

The charger may get warm to the touch, so make sure you charge them in an open area and do not lay anything on the charger unit while charging. Although you cannot over-charge the batteries, we recommend that you do not leave the charger plugged in for more than 24 hours.

If your charger shows a solid green light after charging for a short period of time, your battery may have been only partially discharged (short ride), or this may be the sign of a partially worn out battery with reduced storage capacity. Continue charging for the full time, to cover all the bases. If the battery still has not charged, you may need to replace it.

Even with proper care, a rechargeable battery does not last forever. Average battery life depends on use and conditions.



The charger and charger port should be regularly inspected for damage (cord, plug, enclosure, etc.). If damage is found stop using until the damaged part can be repaired or replaced.

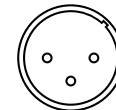
How to use the battery charger

1. Plug the charger into the outlet. The indicator light on the top of the charger will illuminate when the charger is working properly. Refer to the sticker on the charger for actual status light indication.
2. Insert the XLR plug into the charger port on the bike battery being sure the charger plug is fully seated in the charger port. The light should be solid red or blinking green to indicate charging however you will need to refer to the sticker on the charger for actual status light indication.
3. Once the battery reaches full charge, the light will return to solid green
4. When charging is complete, unplug the charger from the wall before removing it from the charger port.

Charge for the full time. If the battery still has not charged, you may need to replace it.



Charger w/ XLR Plug



XLR Plug

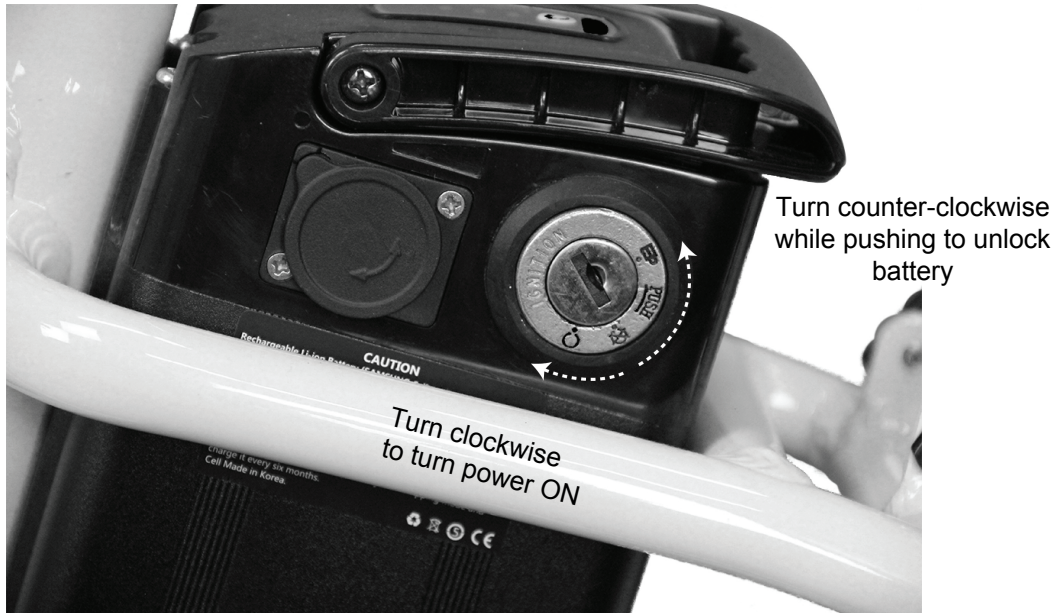


Use only the supplied charger for your bicycle. Using any other charger will damage the batteries and void your warranty.

Main Power Switches

KEY LOCK POWER SWITCHES

Current is equipped with a key lock power switch. This feature provides added security allowing only the person with the key to remove the battery as well as turn the power on or off. This key lock switch has the same function as a standard power switch.



Key Lock Power Switch

Fuses

All American Cycle Company® Electric Bicycles are equipped with fuses. The fuse is located at the bottom of the battery pack as shown below

- Fuse Type: Li-Ion, 30A 250V tube fuse

In the event of an overload the fuse will pop and need to be replaced. In this instance replace only with the fuse type listed above.



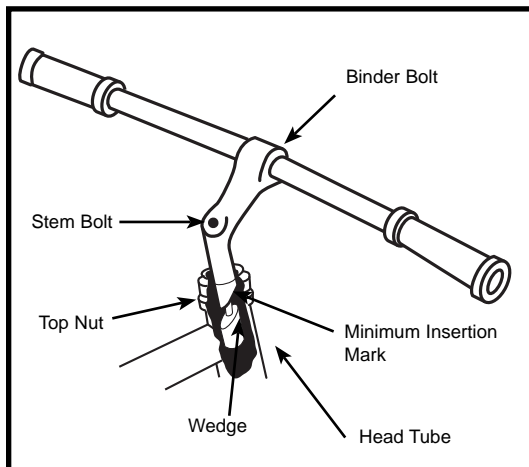
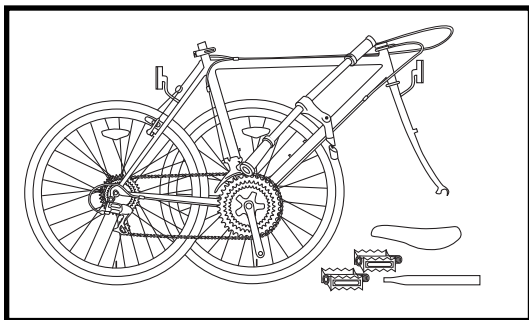
Risk of fire. Do not bypass fuse.



Unscrew to locate
and replace fuse.

BICYCLE ASSEMBLY

assembly is the same for men's and women's bikes.



We recommend that you consult a bicycle specialist if you have doubts or concerns as to your experience or ability to properly assemble, repair, or maintain your bicycle.

Getting Started

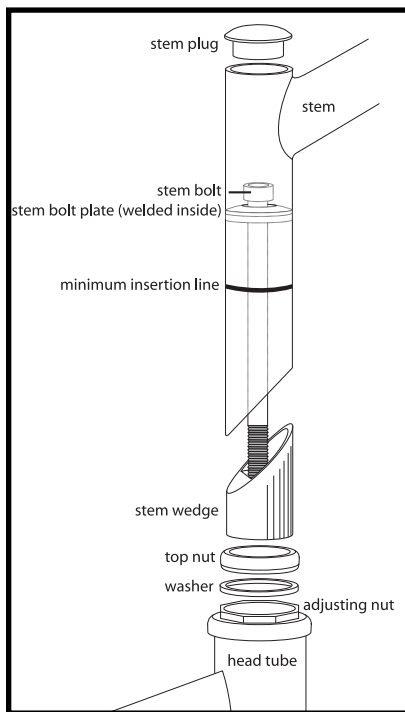
Open the carton from the top and remove the bicycle. Remove the straps and protective wrapping from the bicycle. Inspect the bicycle and all accessories and parts for possible shortages. It is recommended that the threads and all moving parts in the parts package be lubricated prior to installation. Do not discard packing materials until assembly is complete to insure that no required parts are accidentally discarded. Assemble your bicycle following the steps that pertain to your model. Note: Your bicycle may be equipped with different style components than the ones illustrated.

Handlebars

Remove the protective cap from the handlebar stem wedge and loosen the Allen key bolt using the 6mm Allen key. Some models may use a 13mm hexagonal bolt instead of an Allen key bolt. Place the handlebar stem into the top of the head tube, ensuring that all cables are free of tangles. Tighten the stem bolt observing the minimum insertion mark and checking that the forks and the handlebars are facing forward. Check the headset for smooth rotation and that the top nut is secured tightly. Loosen the 6mm Binder Bolt and rotate the handlebar forward so the levers are at a 45 degree angle below the handlebar. Retighten the Binder Bolt to ensure the handlebar does not rotate in the stem.



Warning: Over tightening the stem bolt or headset assembly may cause damage to the bicycle and/or injury to the rider.



Standard Stem Bolt System

1. Remove the protective shipping cap from the stem wedge.
2. Remove the Stem Plug from the stem. Loosen the Stem Bolt with a 6mm allen wrench or 13mm box wrench.
3. Insert the stem into the headtube of the bicycle. Ensure that the Minimum Insertion Line is below the top nut of the headset.
4. Align the stem and handlebar so it is in line with the front wheel.
5. Tighten the Stem Bolt with the 6mm allen wrench. Reinsert the Stem Plug into the stem.

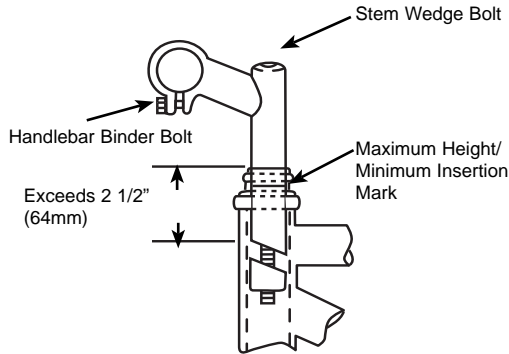
WARNING: MINIMUM INSERTION LINE MUST BE HIDDEN WITHIN THE HEADTUBE OF THE BICYCLE.



If the stem is not inserted into the top nut to at least the “Minimum Insertion” mark, it is possible to over-tighten the stem bolt and damage the fork steerer tube. If these instructions are not followed, it could cause an unsafe condition and risk injury to the rider. Check steering tightness prior to riding by straddling the front wheel. Try turning the handlebar. If you can turn it without turning the front wheel, the stem is too loose. Re-align the handlebar with the front wheel and re-tighten the stem bolt.

Handlebar Height

Maximum comfort is usually obtained when the handlebar height is equal to the height of the seat. You may wish to try different heights to find the most comfortable position.

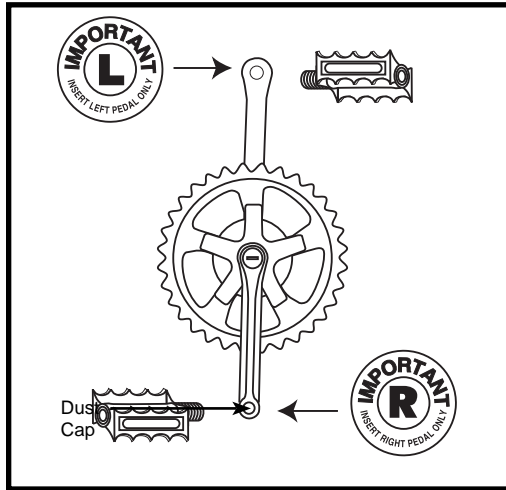


Threadless headsets and clamp-on stems are not adjustable. Please refer to page 34 for instructions on installation.

The stem's "Minimum Insertion" mark must not be visible above the top of the headset. If the stem is extended beyond this mark, the stem may break or damage the fork's steerer tube, which could cause you to lose control and fall.

Failure to properly tighten the stem binder bolt, the handlebar binder bolt, or the bar end extension clamping bolts may compromise steering action, which could cause you to lose control and fall. Place the front wheel of the bicycle between your legs and attempt to twist the handlebar/stem assembly using a reasonable amount of force. If you can twist the stem in relation to the front wheel, turn the handlebars in relation to the stem, or turn the bar end extensions in relation to the handlebar. Prior to riding, you must fully tighten the appropriate bolts accordingly.

Note: In addition to normal assembly, please be aware that the preload adjusting screw must be flush with the bottom of the post. Some bicycles may come equipped with a shim that should be positioned over the lower half of the seat post and inserted into the seat tube of the frame. Failure to do this may cause irreparable damage.

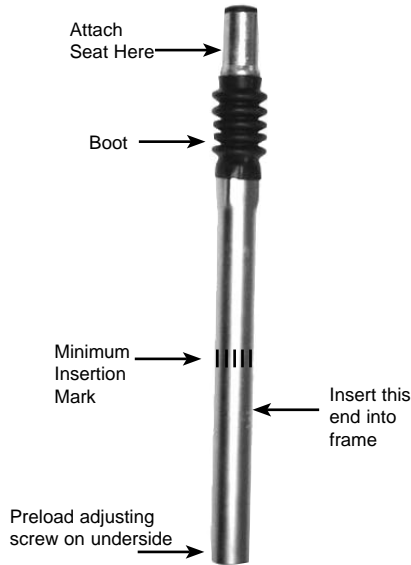
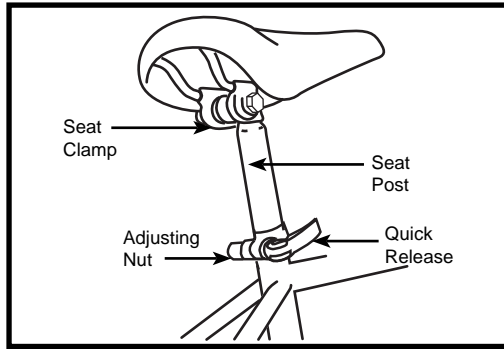


Pedals & Crank Set

Look for the letters “R” for right, and “L” for left, stamped on each pedal spindle. Start each pedal spindle by hand to avoid stripping the threads. Tighten with a 15mm narrow open ended wrench. Note that the right hand pedal attaches to the chainwheel side crank arm with a right-hand (clockwise) thread. The left pedal attaches to the other crank arm and has a left-hand (counter-clockwise) thread. It is very important that you check the crank set for correct adjustment and tightness before riding your bicycle. New cranks may become loose with initial use, refer to pages 105-108 for proper crank set adjustment and maintenance. Once the pedals have been installed, remove the dust caps from the center of each crank arm. Using a 14mm socket wrench, tighten the spindle nuts securely (approx. 350 in. lbs.) and replace the dust caps.



Attachment of an incorrect pedal into a crank arm can strip pedal threads and cause irreparable damage. Before your first ride, please check to insure your pedals are attached correctly.



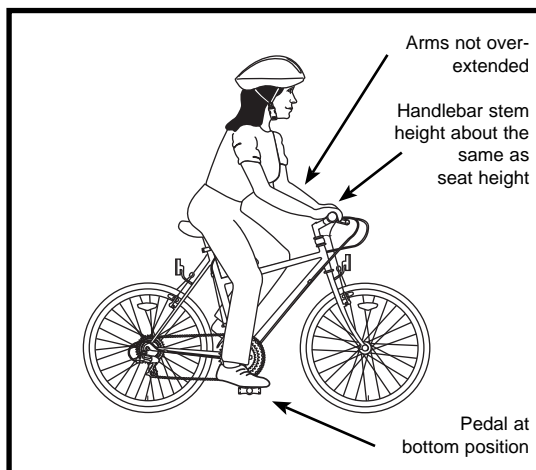
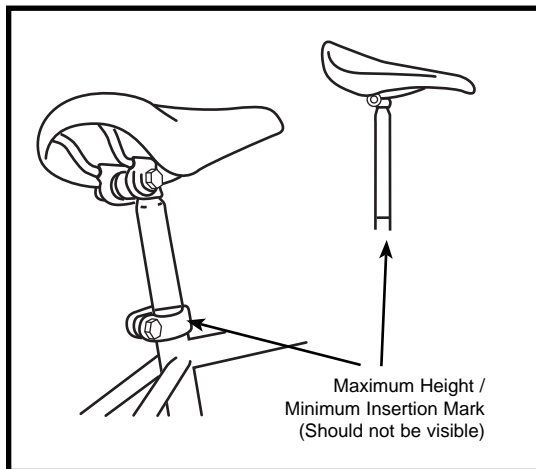
Seat and Seat Post

Attach the seat to the seat post by loosening the nuts on the seat clamp. Insert the tapered end of the seat post into the seat clamp until it is at the top of the clamp. Partially tighten the nuts on the seat clamp until the seat is snug, but can still be turned. Insert the seat assembly into the frame of the bicycle and adjust the seat to the proper height. The seat post must be inserted to at least the "Minimum Insertion" line marked on the seat post. If equipped with a quick release skewer: tighten the adjusting nut by hand and move the quick release lever to the closed position. You should feel considerable resistance while moving the lever. If not, re-open and re-tighten the lever, then move it to the closed position so it is in line with the frame as pictured. If equipped with a binder clamp: Insure the lip on the binder clamp is fitted completely against the top of the seat tube of the frame. With the seat post inserted, tighten the binder bolt securely. Position the top of the seat parallel with the ground. Push the front of the seat up and down to firmly mesh the serrations together. The serrations must mesh completely together to insure a stabilized riding position. Securely tighten the nut on the seat clamp. If there is a nut on both sides of the clamp, tighten each one by alternating from one to the other. Check for tightness by twisting the seat from side to side, and from front to back. If the seat moves at the seat clamp or quick release, reposition and re-tighten the appropriate clamping mechanism.

NOTE: Some models of bicycles may be equipped with a suspension seat post (See Diagram-bottom left). Some suspension posts can be adjusted for stiffness using the preload adjusting screw. Turning the 6mm Allen screw Clockwise will decrease travel and make the suspension stiffer, while turning the 6mm Allen screw Counter-clockwise will increase travel and make the suspension softer.



The seat post must be inserted so that the minimum insertion mark cannot be seen. The quick release mechanism must be tightened securely to prevent a sudden shift of the seat when riding. Failure to do this may cause loss of bicycle control.



RIDING POSITION

Seat Height

In order to obtain the most comfortable riding position and offer the best possible pedaling efficiency, the seat height should be set correctly in relation to the rider's leg length. The correct saddle height should not allow leg strain from over-extension, and the hips should not rock from side to side when pedaling. While sitting on the bicycle with one pedal at its lowest point, place the ball of your foot on that pedal. The correct saddle height will allow the knee to be slightly bent in this position. If the rider then places the heel of that foot on the pedal, the leg should be almost straight.

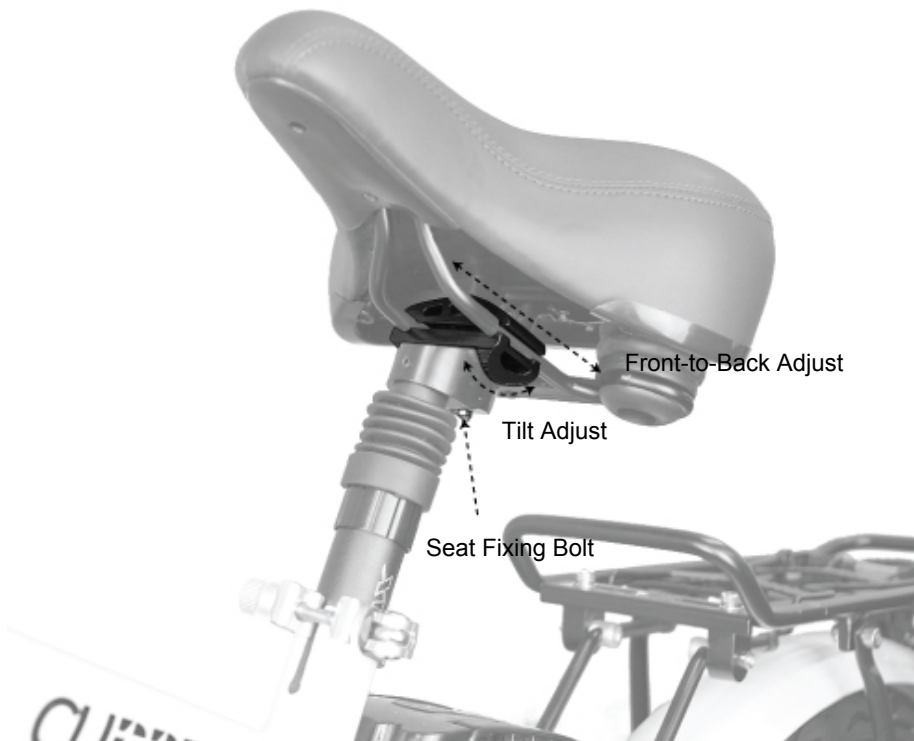


Under no circumstances should the seat post project from the frame beyond its “Minimum Insertion” or “Maximum Extension” mark. If your seat post projects from the frame beyond these markings, the seat post or frame may break, which could cause you to lose control and fall. Prior to your first ride, be sure to tighten the seat clamp properly. A loose seat clamp or seat post binder can cause damage to the bicycle or can cause you to lose control and fall. Periodically check to make sure that the seat clamp is properly tightened.

Reach

To obtain maximum comfort, the rider should not overextend his or her reach when riding.

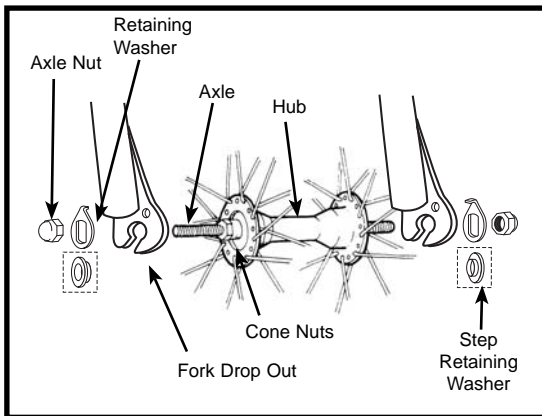
To adjust this distance, the position of the seat can be altered in relation to the seat post. (Refer to page 98 on how to adjust the seat clamp.)



Seat Adjust

Use Seat Adjust to fine tune your seat to optimal comfort.

Use a 6mm Allen wrench to loosen the Seat Fixing Bolt shown to the left, you can then slide the seat forward or backward as well as adjust the tilt to your preference. When satisfied, re-tighten screw.

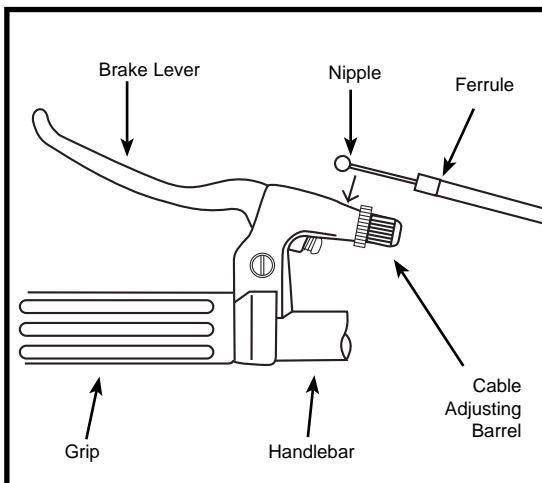


Front Wheel

1. Make sure the brakes are loose enough to allow the wheel to pass through the brake pads easily.
2. Place wheel into fork drop outs.
3. Install retaining washers with raised lip pointed towards the fork, and insert into the small hole of the fork blade. NOTE: Some bikes may have step retaining washers in place of the retaining washer (shown in dotted box). If so, install the step retaining washer, raised portion sliding in to the fork dropouts.
4. Install axle nut and tighten. Make sure the wheel is centered between the fork blades.
5. Spin the wheel to make sure that it is centered and clears the brake shoes. Tighten the brakes if necessary.
6. Turn the bicycle upright using the kickstand to support it.



It is very important to check the front wheel connection to the bicycle. Failure to properly tighten may cause the front wheel to dislodge.

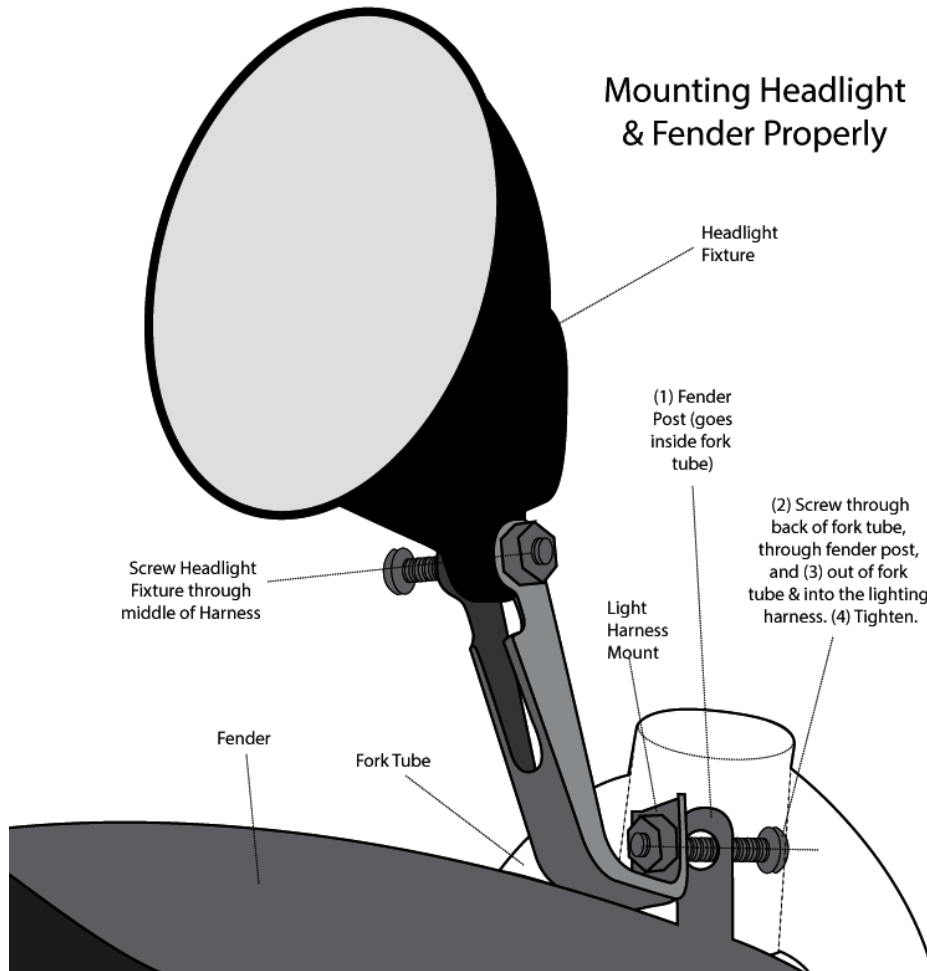


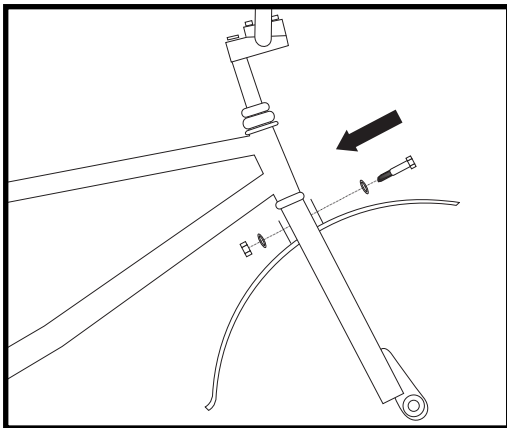
Front Brake

Determine which type of brake your bike is equipped with and refer to the appropriate assembly instructions. For more information on brake adjustment and maintenance, refer to pages 99-102. A greater force is required to activate the rear brake due to longer cable length. It is advisable to mount the rear brake on the side of the stronger hand. It is important to become familiar with the use of hand brakes. When properly adjusted, hand brakes are an efficient braking system. Keep the rim and brake shoes clean and free from wax, lubricants and dirt at all times. **Keep brakes properly adjusted and in good working condition at all times.**

Open the brake lever and place the nipple end of the short brake cable into the lever, then close the lever. Secure the ferrule against the lever using the cable adjusting barrel.

Mounting Headlight & Fender Properly





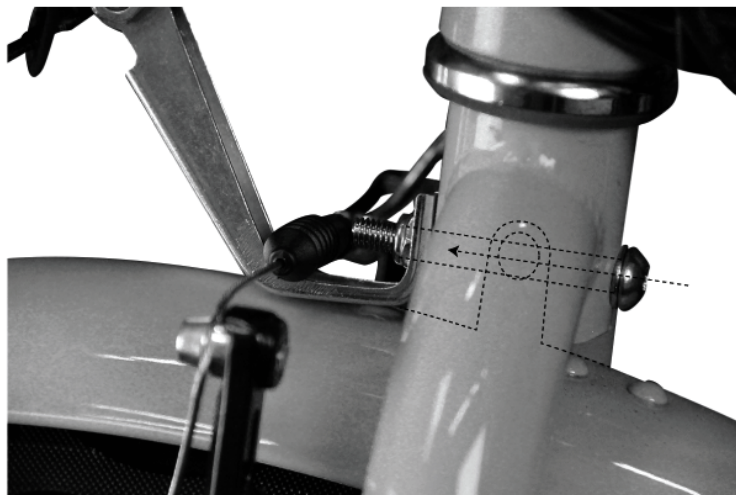
Fenders

Front Fender

The front fender is mounted at the fork crown using a 10mm nut and bolt system.

10mm Nut and Bolt Mounting System

Place the fender post into the opening under the fork crown (shown below) making sure the attachment holes and fender bracket holes line up. Send it through the back of the light harness and tighten (see next page).



Bolt should go in the back of the fork crown, through the fender post inside the fork (keeping the fender post as flush as possible with the inner fork opening, out the front of the fork and into the back of the lighting harness.

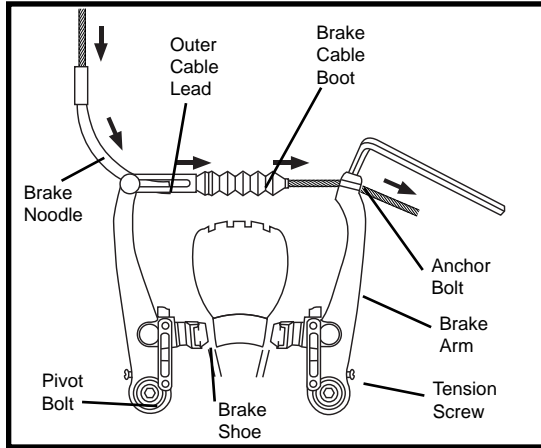
Connect the Lighting to Electrical Source

Find the two small cables coming from the cabling near the front of the handlebars. Follow the diagram and instructions below to properly connect lighting. The cable with the white stripe along the side is your Positive connection, while the all black cable is the Negative connection. Insert them onto the appropriate terminals for proper functionality.



Front Brake

Determine which type of brake your bike is equipped with and refer to the appropriate assembly instructions. For more information on brake adjustment and maintenance, refer to pages 74-77.

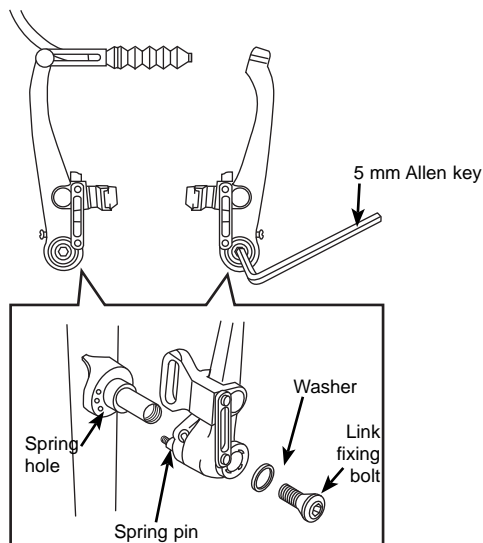


V-Style Brakes

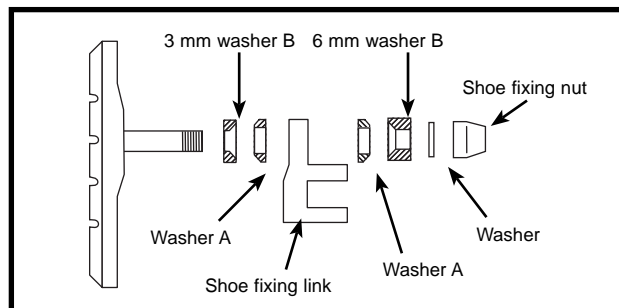
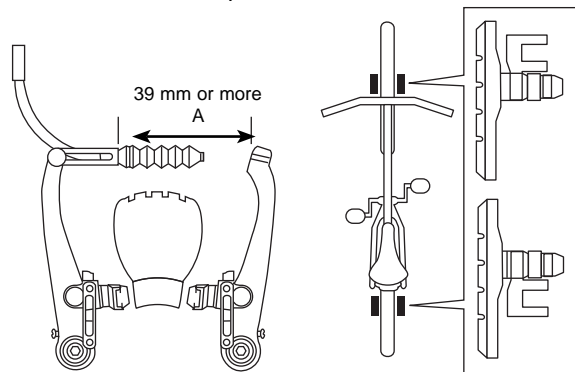
If not already assembled, take the brake noodle from the parts box and slide the cable through the larger opening. The cable housing will then seat into the end of the noodle. Slide the cable through the cable lead on the end of the left brake arm, this will cause the noodle to fit into the lead. Slip the brake cable boot over the cable and position it between both brake arms. Next, loosen the 5mm anchor bolt at the end of the right brake arm and slide the cable under the retaining washer. Pull the slack out of the cable making sure a distance of 39mm or more remains between the end of the lead and the start of the anchor bolt. Once the cable is secured to the brake arms, engage the brake lever several times, checking the position of the brake shoes at the rim. The brake shoes should be 1mm away from the rim when in a relaxed position. When the brake lever is engaged, the brake shoe should hit the rim flush (never the tire) with the front of the brake pad touching the rim slightly before the rear. This is called “toeing-in” your brake shoe. If this position is not achieved, adjustments to the brake shoe are required. Loosen the brake shoe hardware and reposition the brake shoe. It may take several shoe and cable adjustments before the required position is accomplished.

V - Brake

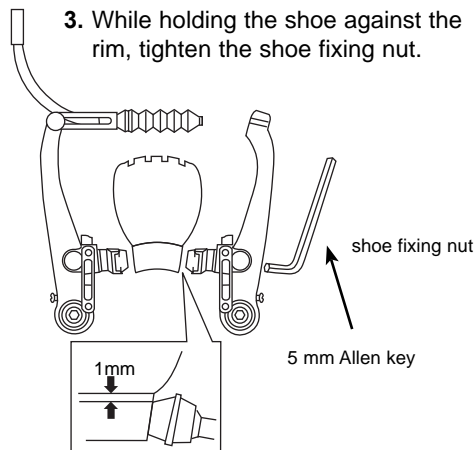
1. If fitted with V-Brakes, insert the brake body into the center spring hole in the frame mounting boss, and then secure the brake body to the frame with the link fixing bolt.



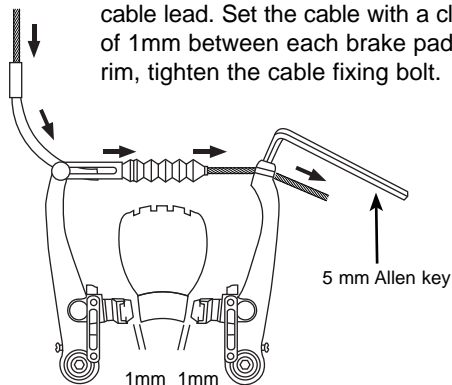
2. While holding the shoe against the rim, adjust the amount of shoe protrusion by interchanging the position of the B washers (i.e. 6 mm and 3 mm) so that dimension A is kept at 39 mm or more.



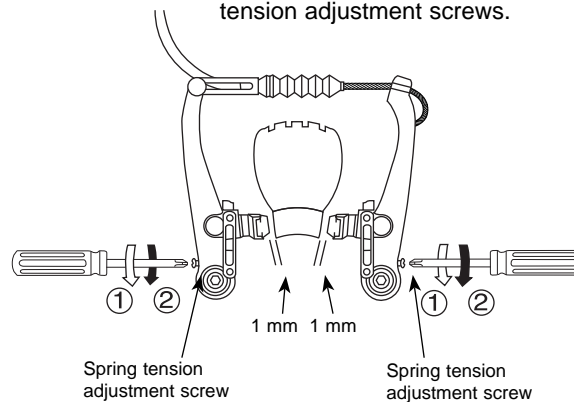
- 3.** While holding the shoe against the rim, tighten the shoe fixing nut.



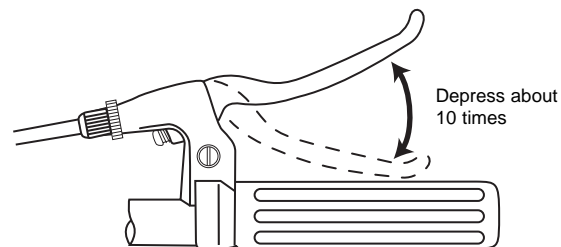
- 4.** Pass the inner cable through the inner cable lead. Set the cable with a clearance of 1mm between each brake pad and the rim, tighten the cable fixing bolt.



- 5.** Adjust the balance with the spring tension adjustment screws.

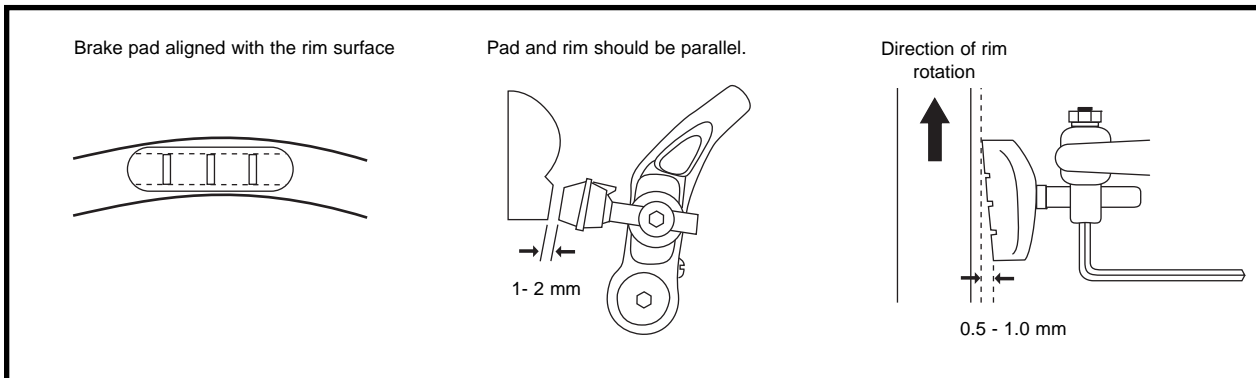


- 6.** Depress the brake lever about 10 times as far as the grip to check that everything is operating correctly and that the shoe clearance is correct before riding the bike.



Check your Brakes

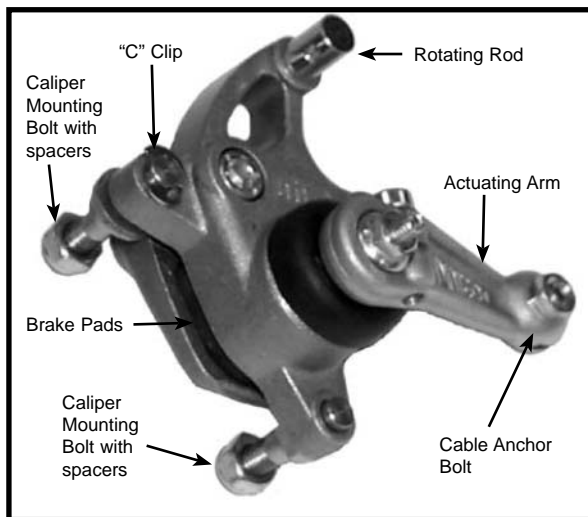
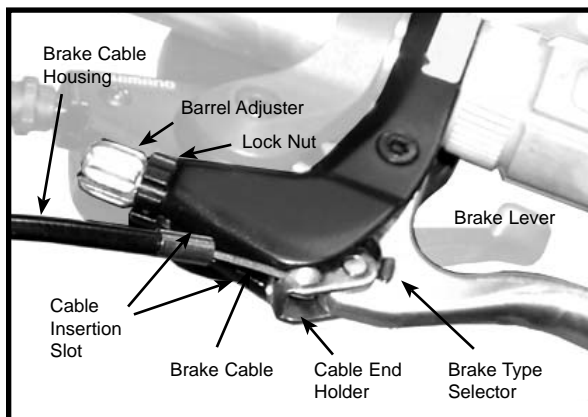
Press each brake lever to make sure that there is no binding and that the brake pads press hard enough on the rims to stop the bike. The brake pads should be adjusted so they are 1 mm to 2 mm away from the rim when the brakes are not applied. Brake pads should be centered on the rim and “toed-in” so the rear portion of each brake pad is about 0.5 - 1.0 mm farther from the rim than the front portion of the brake pad.



Do not ride the bicycle until the brakes are functioning properly. To test, apply the brakes while trying to push the bike forward to make sure they will stop the bicycle. Never ride a bicycle that is not functioning properly.



Do not lock up brakes. Sudden or excessive application of the front brake may pitch the rider over the handlebars, causing serious injury or death. When braking, always apply the rear brake first, then the front.



Disc Brakes (if equipped)

If fitted with a front disc brake, the components should already be attached. However, please check all connections before attempting to ride the bicycle. Secure tightly the 6 bolts that hold the disc to the front wheel hub and the 2 bolts that hold the brake mechanism to the fork. Insert the front wheel into the fork dropouts ensuring that the disc fits into the brake mechanism between the enclosed brake pads. Secure the front wheel to the bicycle by tightening the quick release mechanism and clamping the lever to the closed position. Please refer to section 6 for further instruction on quick release mechanisms.

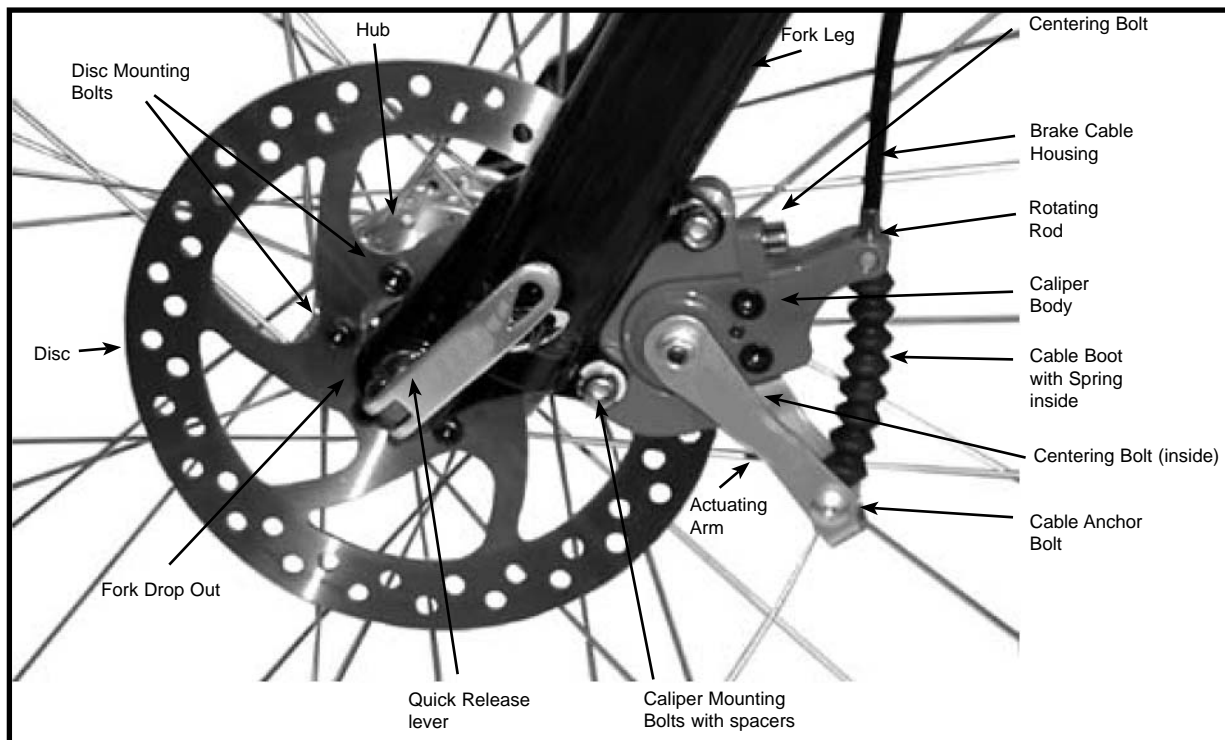
Next, attach the cable to the brake lever by inserting the cable end into the cable end holder after the barrel adjuster and lock nut slots have been aligned with the cable end holder. After the cable is secured to the lever, rotate the barrel adjuster and lock nut so the slots no longer line up. Ensure the cable housing seats appropriately into the end of the barrel adjuster and check for any kinks or damage.

Slide the exposed brake cable through the rotating rod/housing stop located on the caliper body and seat the housing all the way into the same stop. Insert the cable into the spring and spring boot.

Next, slide the cable through the cable anchor and pull all the slack out. Secure the cable in place by tightening the bolts that comprise the anchor assembly. Some disc brakes will have a centering device while others are a free-floating mechanism. If your caliper body is equipped with centering bolts, apply the brake lever after the cable has been connected. While engaging the lever, tighten the centering bolts securely. This will center the caliper body on the disc.

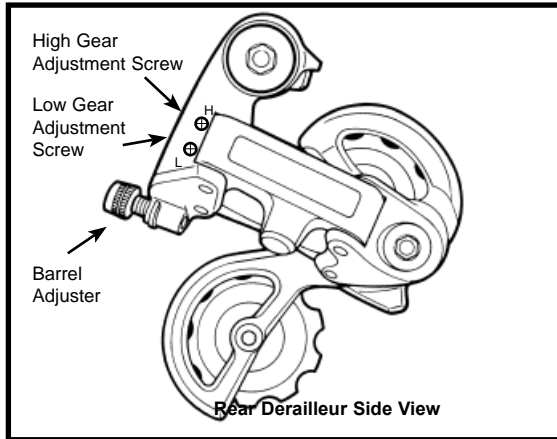
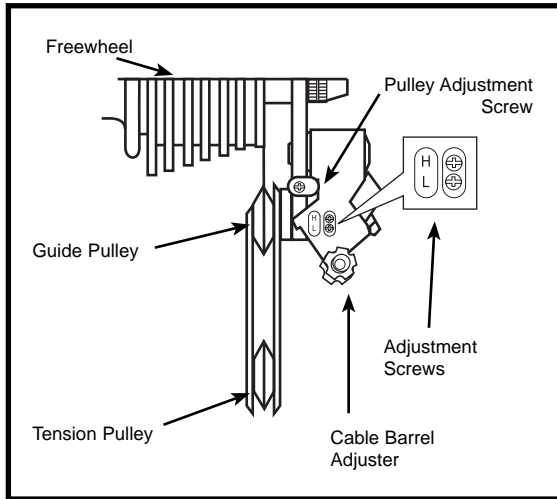


DISC GETS HOT! Severe injury could result from contact with the hot disc! Mind your legs, as well as your hands.



These brakes require breaking in! Ride and use the brakes gently for 13 miles before using the brakes in downhill conditions, for sudden stops, or any other serious braking. Please be aware that your brake system will change in performance throughout the wear-in process. The disc brake should be cleaned before the first ride using rubbing alcohol. NEVER use oil or similar products to clean your disc brake system.

Avoid touching the rotor (disc) with your fingers at any time. Naturally oily fingers can contaminate the rotor and/or the brake pads and diminish the brake's effectiveness.



Derailleur

Although the front and rear derailleurs are initially adjusted at the factory, you will need to inspect and readjust both before riding the bicycle.

Rear Derailleur

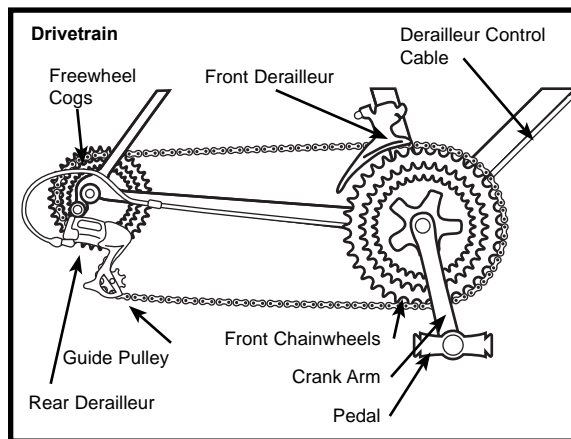
Begin by shifting the rear shifter to largest number indicated, disconnect the cable from the rear derailleur cable anchor bolt, and place the chain on the smallest sprocket.

Adjust the High limit screw so the guide pulley and the smallest sprocket are lined up vertically. Reconnect the cable, pull out any slack, and retighten the anchor bolt securely. Shift through the gears, making sure each gear achieved is done quietly and without hesitation. If necessary, use the barrel adjuster to fine tune the cable tension by turning it the direction you want the chain to go. For example, turning clockwise will loosen the cable tension and move the chain away from the wheel, while turning counter-clockwise will tighten cable tension and direct the chain towards the wheel. Shift the rear shifter to the gear one and place the chain on the largest cog.

Adjust the Low limit screw in quarter turn increments until the guide pulley and the largest cog are aligned vertically. Again, shift through each gear several times, checking that each gear is achieved smoothly. It may take several attempts before the rear derailleur and cable is adjusted properly.



Ensure all bolts are secured tightly and the chain does not fall off in either direction.



GEARS - HOW TO OPERATE

Derailleur Gears

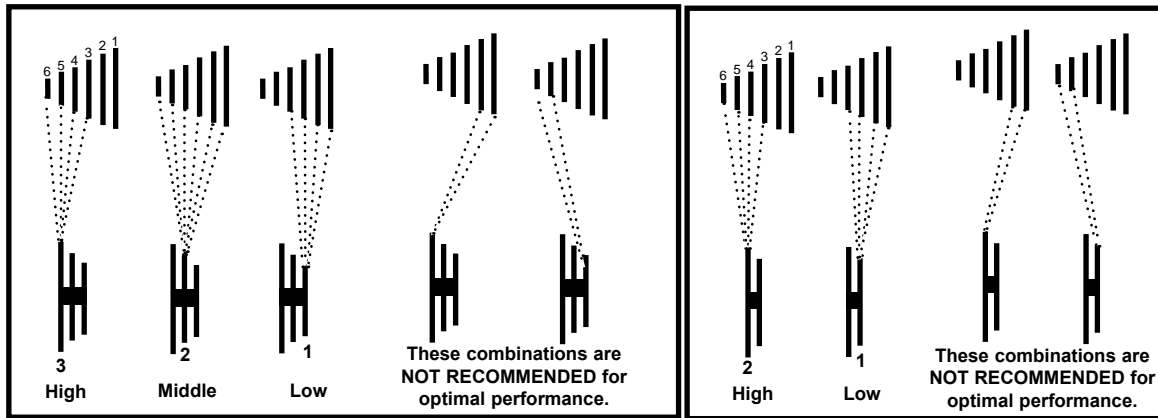
Most multi-speed bicycles today are equipped with what are known as derailleur gears. They operate using a system of levers and mechanisms to move the drive chain between different sized driving gears or cogs. The purpose of gears is to let you maintain a constant, steady pedaling pace under varying conditions. This means your riding will be less tiring without unnecessary straining up hills or fast pedaling down hill. Bicycles come with a variety of gear configurations from 5 to 30 speeds. A 5-6 speed bicycle will have a single front chainwheel, a rear derailleur, and 5 or 6 cogs on the rear hub. Bicycles with more gears will also have a front derailleur, a front chainwheel with 2-3 cogs, and up to 10 cogs on the rear hub.

Operating Principles

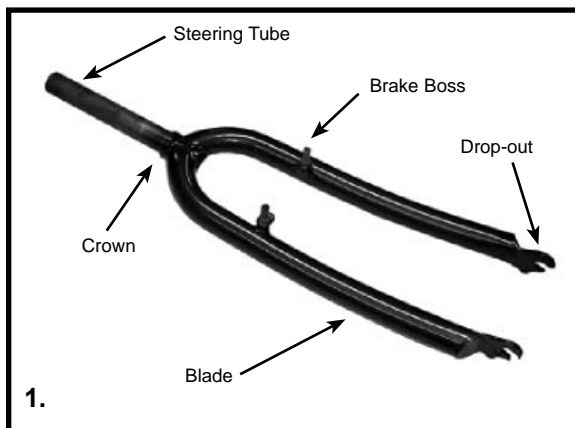
No matter how many gears, the operating principles are the same. The front derailleur is operated by the left shift lever and the rear derailleur by the right. To operate you must be pedaling forward. You can not shift derailleur gears when you are stopped or when pedaling backwards. Before shifting ease up on your pedaling pressure. For a smooth gear change when approaching a hill, shift to a lower gear BEFORE your pedaling speed slows down too much. When coming to a stop, shift to a lower gear first so it will be easier when you start riding again. If, after selecting a new gear position, you hear a slight rubbing noise from the front or rear gears, some adjustments may be necessary. Gently adjust the appropriate shifter using the barrel adjusters until the noise goes away. For optimal performance and extended chain life, it is recommended that you avoid using the extreme combinations of gear positions (Refer to diagram on page 25) for extended periods. It is recommended that a trained bicycle technician perform all adjustments to the shifters and derailleurs.

1) Shifting the Rear Derailleur

The rear derailleur is controlled by the right shifter. The function of the rear derailleur is to move the drive chain from one gear to another on the rear gear cluster, thereby changing gear drive ratios. The smaller sprockets on the gear cluster produce higher gear ratios. Pedaling in the higher gears requires greater pedaling effort, but takes you a greater distance with each revolution of the pedal cranks. The larger sprockets produce lower gear ratios. Using them requires less pedaling effort, but takes you a shorter distance with each pedal crank revolution. Moving the chain from a smaller sprocket of the gear cluster to a larger sprocket results in a downshift. Moving the chain from a larger sprocket to a smaller sprocket results in an upshift. In order for the derailleur to disengage the chain from one sprocket and move it on to another, the chain must be moving forward (i.e. the rider must be pedaling forward).



Recommended Chainwheel/Rear Sprocket Gear Combinations

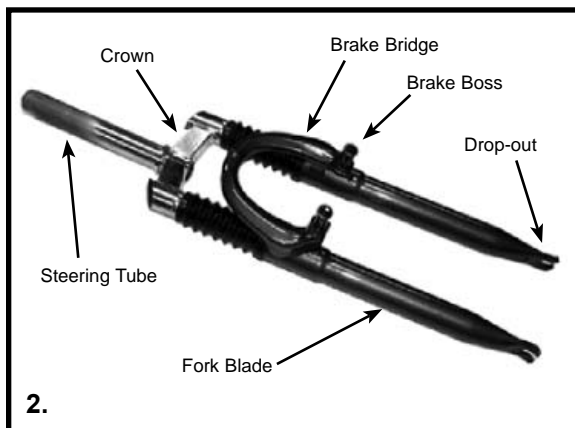


Forks

There are two different types of forks that vary in styles and dimensions. One type is a rigid fork (Figure 1) consisting of stationary tubing with curved blades. The other type is a suspension fork (Figure 2) consisting of inner stanchion tubes riding on elastomers or springs inside of a straight outer fork leg. This mechanism acts as a shock absorber with a specified amount of travel that varies between models. Some suspension forks are not adjustable and are very difficult to disassemble. If service is needed on a suspension fork, consult a professional bicycle repair technician.



Do not attempt to disassemble a suspension fork yourself. Consult a professional bicycle repair technician.



Check the tightness of the headset and the fork. Rotate the fork checking for smoothness. If it feels like the fork is binding, then an adjustment will need to be made to the headset. Move the fork in a push/pull manner checking for tightness. If any play is detected, loosen the top nut, adjust the bearing cup, and retighten the top nut. Recheck the rotation and tightness. If necessary, readjust until a smooth rotation is achieved without backward or forward movement. If your bike is equipped with a suspension fork, check that the fork compresses and rebounds smoothly. To do this, place the fork dropouts against the ground, push and release the handlebar. The fork will generally compress 1-2" and rebound quickly. Most elastomer type forks will gradually soften with use.

Final Check

- After all adjustments have been made, shift through every gear several times at varying speeds. This will ensure all your adjustments are correct and will allow you to pinpoint any trouble areas. If you encounter any problems, refer to the appropriate section and make any necessary adjustments.
- Check the tire pressure and inflate each tube to the recommended psi as stated on the sidewall of the tire.
- Check that the kickstand operates smoothly and the kickstand bolt is secured tightly.
- Finally, examine the bicycle. Make sure all accessories are attached and all quick releases, nuts and bolts have been tightened securely.
- Correct maintenance of your bicycle will ensure many years of happy riding. Service your bicycle regularly by referring to the relevant sections of this manual, OR take it to a professional bicycle shop.
- Remember: Always wear a helmet and obey all traffic laws.



Never inflate a tire beyond the maximum pressure marked on the tire's sidewall. Exceeding the recommended pressure may blow the tire off the rim, which could cause damage to the bicycle and injury to the rider and bystanders.



Tighten both rear wheel axle nuts or the quick release mechanism securely. Failure to do this may cause the rear wheel to dislodge from the frame dropouts resulting in serious damage or injury.

Correct routine maintenance of your new bike will ensure smooth running - Longer lasting components - Safer riding - Lower running costs

Every time you ride your bicycle, its condition changes. The more you ride, the more frequently maintenance will be required. We recommend you spend a little time on regular maintenance tasks. The following schedules are a useful guide and by referring to Part 6 of this manual, you should be able to accomplish most tasks. If you require assistance, we recommend you see a bicycle specialist.

Schedule 1 - Lubrication

Frequency	Component	Lubricant	How to Lubricate
Weekly	Chain	Chain Lube or Light Oil	Brush On or Squirt
	Derailleur Pulleys	Chain Lube or Light Oil	Brush On or Squirt
	Derailleurs	Oil	Oil Can
	Brake Calipers	Oil	3 drops from oil can
	Brake Levers	Oil	2 drops from oil can
Monthly	Shift Levers	Lithium Based Grease	Disassemble
Every Six Months	Freewheel	Oil	2 squirts from oil can
	Brake Cables	Lithium Based Grease	Disassemble
Yearly	Bottom Bracket	Lithium Based Grease	Disassemble
	Pedals	Lithium Based Grease	Disassemble
	Derailleur Cables	Lithium Based Grease	Disassemble
	Wheel Bearings	Lithium Based Grease	Disassemble
	Headset	Lithium Based Grease	Disassemble
	Seat Post	Lithium Based Grease	Disassemble

Note: The frequency of maintenance should increase with use in wet or dusty conditions. Do not over lubricate - remove excess lubricant to prevent dirt build up. Never use a degreaser to lubricate your chain (WD-40™)

Schedule 2 - Service Checklist

Frequency	Task
Before every ride	Be sure batteries are fully charged
	Check tire pressure
	Check brake operation
	Check wheels for loose spokes
	Perform safety check
After every ride	Be sure to fully charge batteries
	Quick wipe down with damp cloth
Weekly	Lubrication as per schedule 1
Monthly	Inspect wires
	Inspect connectors
	Lubrication as per schedule 1
	Check derailleur adjustment
	Check brake adjustment
	Check brake and gear cable adjustment
	Check tire wear and pressure
	Check wheels are true and spokes tight
	Check hub, head set and crank bearings for looseness
	Check pedals are tight
	Check handlebars and stem are tight
	Check seat and seat post are tight and comfortably adjusted
Every Six Months	Check frame and fork for trueness
	Perform safety check
Every Six Months	Lubrication as per schedule 1

Frequency	Task
	Check all points as per monthly service
	Check and replace brake pads, if required
	Check chain for excess play or wear
Yearly	Lubrication as per schedule 1

DETAILED MAINTENANCE

WHEELS AND TIRES

Wheel Inspection

It is most important that wheels are kept in top condition. Properly maintaining your bicycle's wheels will help braking performance and stability when riding. Be aware of the following potential problems:

- Dirty or greasy rims:

Caution: These can render your brakes ineffective. Do not clean them with oily or greasy materials. When cleaning, use a clean rag or wash with soapy water, rinse and air dry. Don't ride while they're wet. When lubricating your bicycle, don't get oil on the rim braking surfaces.

- Wheels not straight:

Lift each wheel off the ground and spin them to see if they are crooked or out of true. If wheels are not straight, they will need to be adjusted. This is quite difficult and is best left to a bicycle repair specialist.

- Broken or loose spokes:

Check that all spokes are tight and that none are missing or damaged.

Caution: Such damage can result in severe instability and possibly an accident if not corrected. Again, spoke repairs are best handled by a bicycle repair specialist.

- Loose hub bearings:

Lift each wheel off the ground and try to move the wheel from side to side.

Caution: If there is movement between the axle and the hub, do not ride the bicycle. Adjustment is required.

- Axle nuts:

Check that these are tight before each ride.

- Quick release:

Check that these are set to the closed position and are properly tensioned before each ride.

Caution: Maintain the closed position and the correct adjustment. Failure to do so may result in serious injury.

Tire Inspection

Tires must be maintained properly to ensure road holding and stability. Check the following areas:

Inflation: Ensure tires are inflated to the pressure indicated on the tire sidewalls. It is better to use a tire gauge and a hand pump than a service station pump.

Caution: If inflating tires with a service station pump, take care that sudden over inflation does not cause tire to blow out.

Bead

Seating: When inflating or refitting tire, make sure that the bead is properly seated in the rim before you fully inflate the tire.

Tread: Check that the tread shows no signs of excessive wear or flat spots, and that there are no cuts or other damage.

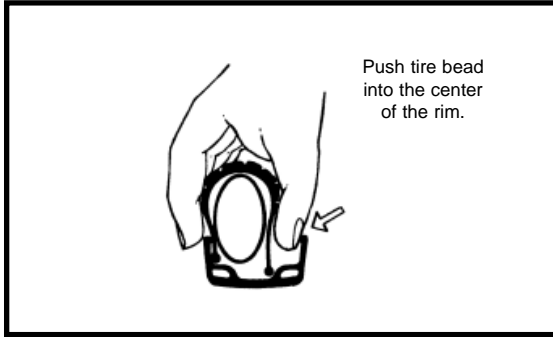
Caution: Excessively worn or damaged tires should be replaced.

Valves: Make sure valve caps are fitted and that valves are free from dirt. A slow leak caused by the entry of the dirt can lead to a flat tire, and possibly a dangerous situation.

Recommended Tire pressures:

The recommended pressure molded on the sidewall of your bicycle tires should match the following chart. Use this as a general guide.

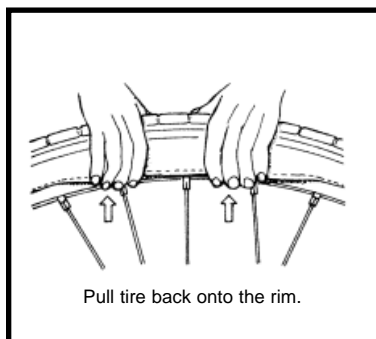
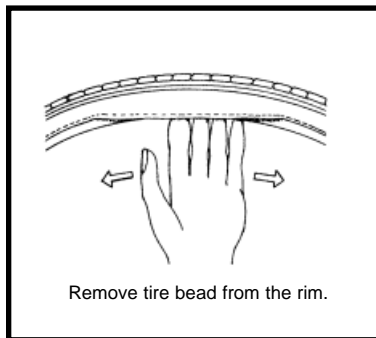
BMX (16"-20")	35-50 psi
Mountain Bike "MTB" (26")	40-65 psi
Road Touring (700c X 35)	70-90 psi
Road Racing (700c X 25)	110-125 psi
Hybrid/Crossbike (700c X 38)	60-100 psi



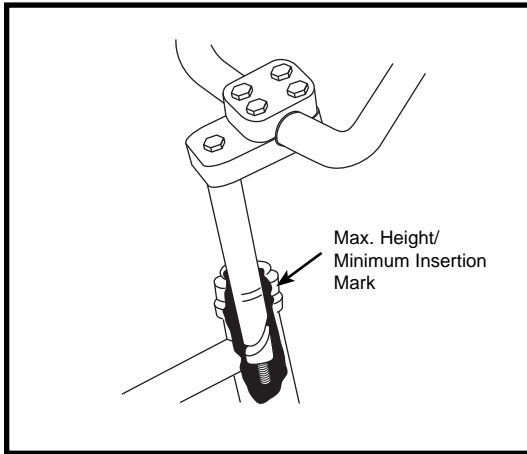
How To Fix a Flat Tire

If you need to repair a tire, follow these steps:

1. Remove the wheel from the bicycle.
2. Deflate the tire completely via the valve. Loosen the tire bead by pushing it inward all the way around.
3. Press one side of the tire bead up over the edge of the rim.
Note: Use plastic tire levers, not a screwdriver, otherwise you may damage the rim and tire.
4. Remove the tube, leaving the tire on the rim.
5. Locate the leaks and patch using a tube repair kit, carefully following the instructions, or replace the tube. Note: Ensure that the replacement tube size matches the size stated on the tire sidewall and that the valve is the correct type for your bicycle.
6. Match the position of the leak in the tube with the tire to locate the possible cause and mark the location on the tire.



7. Remove the tire completely and inspect for a nail, glass, etc. and remove if located. Also inspect the inside of the rim to ensure there are no protruding spokes, rust or other potential causes. Replace the rim tape which covers the spoke ends, if damaged.
8. Remount one side of the tire onto the rim.
9. Using a hand pump, inflate the tube just enough to give it some shape.
10. Place the valve stem through the hole in the rim and work the tube into the tire.
Note: Do not let it twist.
11. Using your hands only, remount the other side of the tire by pushing the edge toward the center of the rim. Start from the opposite side of the valve and work around the rim.
12. Before the tire is completely mounted, push the valve up into the rim to make sure the tire can sit squarely in position.
13. Fit the rest of the tire, rolling the last, most difficult part on using your thumbs.
Note: Avoid using tire levers as these can easily puncture the tube or damage the tire.
14. Check that the tube is not caught between the rim and the tire bead at any point.
15. Using a hand pump, inflate the tube until the tire begins to take shape. Spin the wheel and watch the tire mold lines. They should be evenly spaced from the edge of the rim all the way around the wheel. When properly seated, fully inflate the tire to the pressure marked on the sidewall. Use a tire air pressure gauge to check.
16. Replace the wheel into the frame checking that all gears, brakes and quick release levers are properly adjusted.

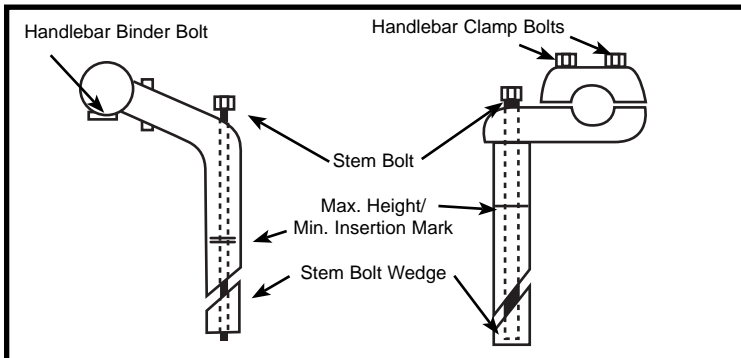


HANDLEBARS AND STEM

Handlebar Stem

The handlebar stem fits into the steering column and is held firmly by the action of a binder bolt and expander wedge which, when tightened, binds with the inside of the fork steerer tube. When removing the stem, loosen the stem bolt two or three turns, then give it a tap to loosen the wedge inside.

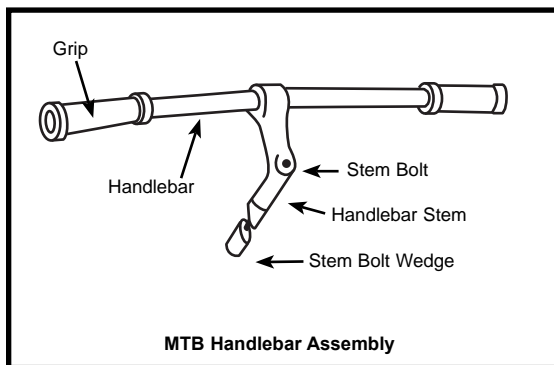
Lubricate by first wiping off any old grease and grime, then applying a thin film of grease to the part, including the wedge, that will be inserted into the frame. The height of the handlebar can be adjusted to suit your comfort preference. If the stem is removed from the steering column, you will notice a mark about 65mm up from the bottom with the words "max. height" or "minimum insertion".



Never ride a bicycle if the stem has been raised so that the max. height/ minimum insertion line can be seen.



Warning: Over tightening the stem bolt or headset assembly may cause damage to the bicycle and/or injury to the rider.



When re-fitting the stem, make sure the handlebars are correctly aligned and tightened using the appropriate hex wrench or allen key.

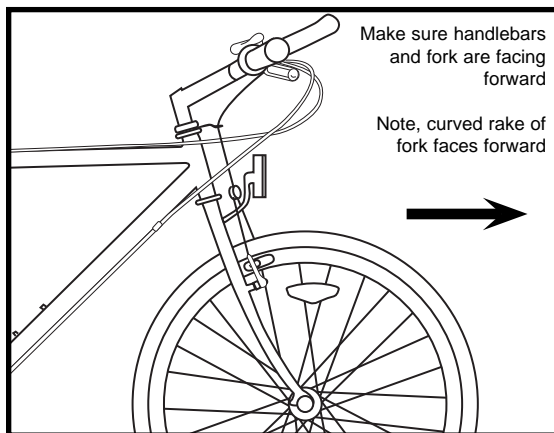
Do not over tighten.

Test the security of the handlebar within the stem, and the stem within the fork steerer tube, by clamping the front wheel between your knees and trying to move the handlebar up and down, and from side to side. The handlebar should not move when applying turning pressure.

Handlebars

The exact positioning of the handlebar is a matter of personal comfort. For MTB bicycles, the bar should be approximately horizontal, with the ends pointing back and slightly up. On BMX bicycles, the handlebar should remain in an approximately upright position but can be angled back or forward slightly for comfort. On MTB and racing style bicycles, the handlebar is usually tightened in the stem by a single allen key bolt or hexagonal bolt. On BMX style bicycles there may be four clamping bolts.

Please note that if you need to replace the fork on your bicycle at any time, please consult a qualified bicycle technician.



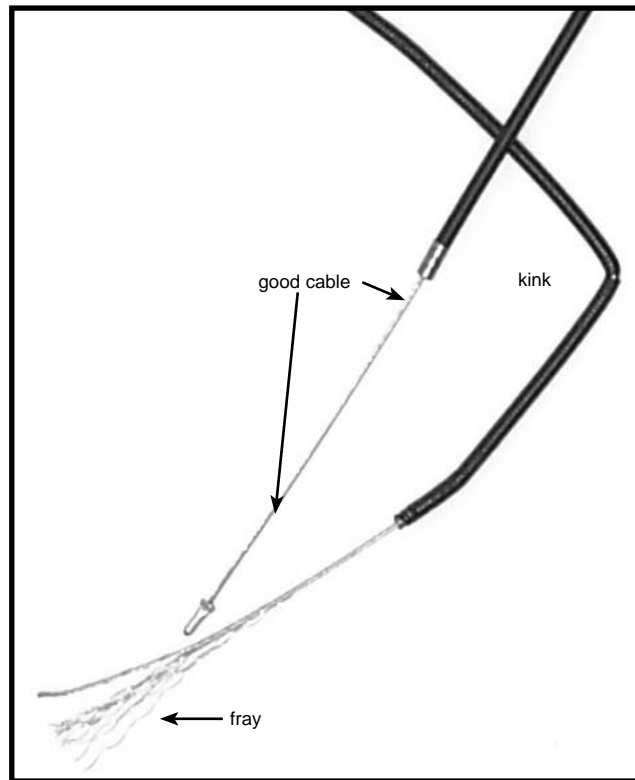
Never ride unless the handlebar clamping mechanism has been securely tightened.

Cables and Cable Housing

Cables and housing are one of the most overlooked parts on the bicycle. The first indication that your cables and housing need to be replaced is an increased amount of pressure needed to operate the brakes or shifters. Before every ride, check that there are no kinks or frays in the cables and housing. Also check that the housing is seated properly into each cable stop of the bicycle. It is recommended that the cables and housing are replaced at least every riding season to prolong the life of your bike.



Do not ride a bicycle that is not operating properly.



HEADSET

Inspection

The headset bearing adjustment should be checked every month. This is important as it is the headset which locks the fork into the frame, and if loose, can cause damage or result in an accident. While standing over the frame top tube with both feet on the ground, apply the front brake firmly and rock the bicycle back and forth; if you detect any looseness in the headset, it will need adjustment. Check that the headset is not over tight by slowly rotating the fork to the right and left. If the fork tends to stick or bind at any point, the bearings are too tight.

Note: If your bike is equipped with a threadless headset, please see a qualified specialist for repairs and adjustments.

Adjustment

Loosen the headset top locknut or remove it completely along with the reflector bracket, if fitted. Turn the adjusting cup clockwise until finger tight. Replace the lock washer or reflector bracket and re-tighten the lock nut using a suitable wrench.

Note: Do not over tighten or bearing damage will occur.

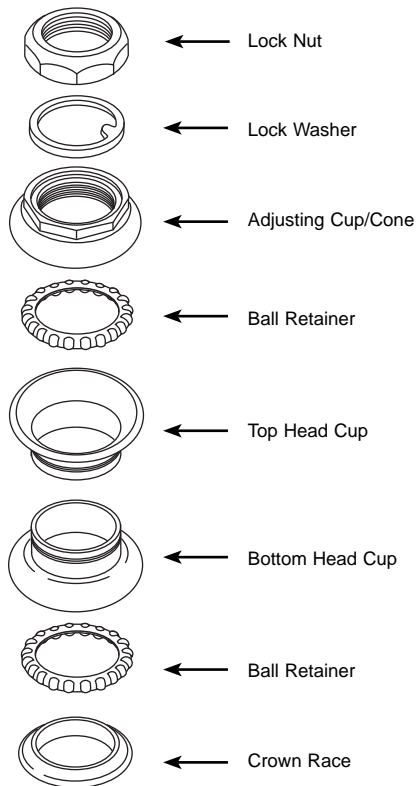


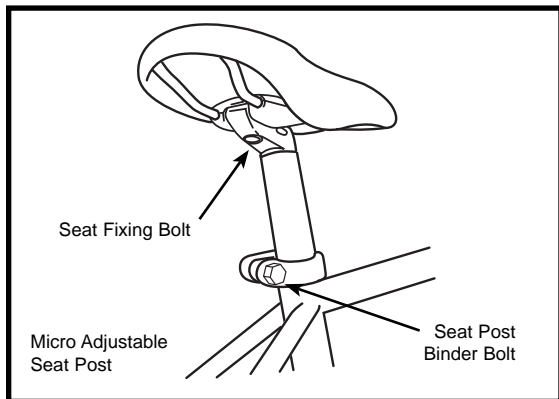
Always make sure that the headset is properly adjusted and that the headset locknut is fully tightened before riding.



Warning: Over tightening the stem bolt or headset assembly may cause damage to the bicycle and/or injury to the rider.

Standard Headset





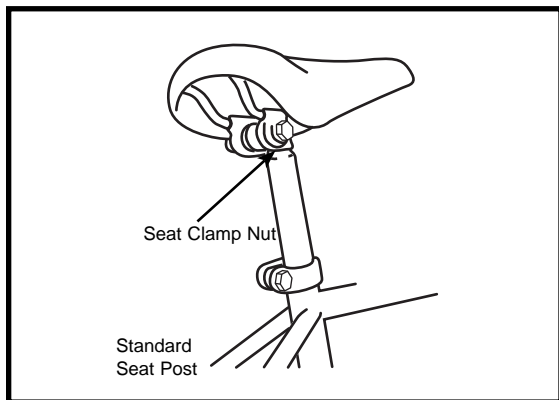
SADDLE AND SEAT POST

Inspection

The seat fixing bolt and the seat post binder bolt should be checked for tightness and adjustment every month. On removing the seat post from the frame, you will notice a mark about 65mm up from the bottom with the words "max. height" or "minimum insertion".



To avoid damage to either the seat post, the frame or possibly the rider, the minimum insertion mark must be inside the frame.



Lubrication

Remove the seat post from the frame and wipe off any grease, rust or dirt. Then apply a thin film of new grease to the part that will be inserted into the frame. Re-insert, adjust and tighten the seat post in the frame.

Adjustment

As mentioned in Part 2, the seat can be adjusted in height, angle and distance from the handlebars to suit the individual rider.

Seat angle is a matter of personal preference but the most comfortable position will usually be found when the top of the seat is almost parallel to the ground, or slightly raised at the front.

The seat can also be adjusted by sliding it forward or back along the mounting rails to obtain the most comfortable reach to the handlebars.

When fitting, position the seat post into the clamp under the seat and place it in the frame without tightening. Adjust it to the desired angle and position and tighten the clamping mechanism.

The micro-adjustable clamp, uses a single vertically mounted Allen head fixing bolt to tighten. After fixing the seat to the desired position on the post, adjust the height to the required level and tighten the binder bolt.

Note that the type of binder bolt may be either a hexagonal bolt, an Allen head bolt or a quick release mechanism. The operation of a seat post quick release mechanism is the same as for quick release hubs. (Refer to pages 56-57)

Test the security by grasping the seat and trying to turn it sideways. If it moves, you will need to further tighten the binder bolt.

Note: Remember that the minimum insertion mark must remain inside the frame assembly.

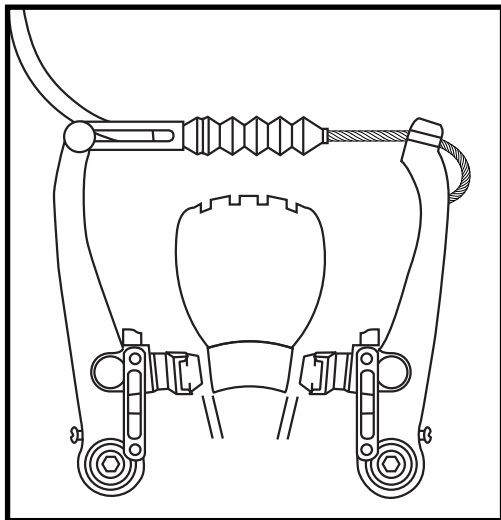
BRAKES

The correct adjustment and operation of your bicycle's brakes is extremely important for safe operation. Brakes should be checked for effective operation before every ride. Frequent checking of adjustment is necessary as the control cables will stretch and the brake pads will become worn with use.



Never ride a bicycle unless the brakes are functioning properly.

There are two types of hand operated bicycle V-brakes in common use: sidepull calipers and V-brake calipers. Both utilize a handlebar mounted lever which controls a cable to operate the brake. Sidepull brakes are mounted to the frame or fork via a single pivot point. Cantilever brakes use two brake pivot arms, each mounted on separate pivots on either side of the frame/fork.



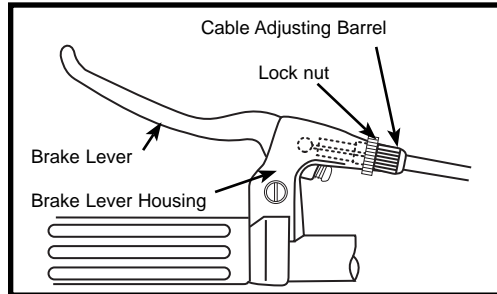
Inspection

Brake levers should be checked for tightness at least every three months. They should be set in a comfortable position within easy reach of the rider's hands, and must not be able to move on the handlebar. Some brake levers make use of a reach adjustment screw, which can be altered to the distance between the handlebar grip and the lever, as required. The brake pads should be checked for correct positioning and tightness before every ride, and the various bolts and nuts at least every three months. Squeeze each brake lever to make sure they operate freely and that the brake pads press hard enough on the rims to stop the bike. There should be about 1mm - 2mm clearance between each pad and the rim when the brakes are not applied. The brake pads must be properly centered for maximum contact with the rim. Replace the brake pads if they are over worn so that the grooves or pattern cannot be seen. The brake cable wires should be checked for kinks, rust, broken strands or frayed ends. The outer casing should also be checked for kinks, stretched coils and other damage. If the cables are damaged, they should be replaced.

Some brakes have a quick release mechanism to allow easier wheel removal. Whenever you adjust the brakes, make sure the quick release mechanism is in the closed position.



Never ride unless the quick release is firmly locked in the closed position.

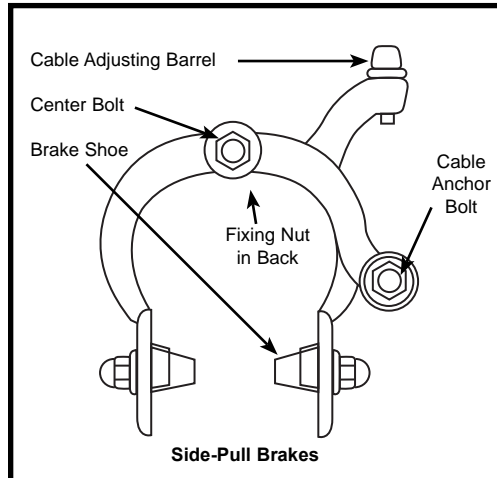


Lubrication

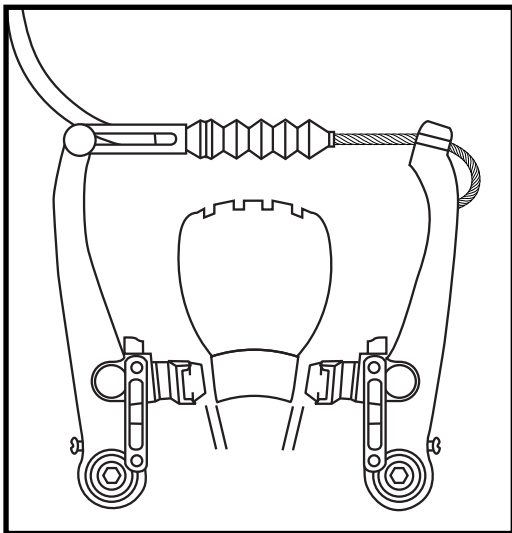
The brake lever and brake caliper pivot points should be oiled with 2-3 drops of light oil at least every three months to ensure smooth operation and to reduce wear. Cables should be lubricated along their entire length, after removing them from their casings, at least every six months. Always lubricate new cables before fitting.

Adjustment - Sidepull Calipers

Minor brake adjustment can be made via the cable adjusting barrel, usually located at the upper cable arm. To adjust, squeeze the brake pads against the rim, loosen the lock nut and turn the adjuster. Brake pad clearance should be a maximum 2mm from the rim. When correct, re-tighten the lock nut. If the pads cannot be set close enough to the rim in this manner, you may have to adjust the cable length. Screw the barrel adjuster 3/4 of the way in, squeeze the pads against the rim, undo the cable anchor bolt and pull the cable through with pliers. Re-tighten the cable anchor bolt and apply full force to the brake lever to test, then fine tune using the barrel adjuster. If one pad is closer to the rim than the other, loosen the fixing nut at the back of the brake, apply the brake to hold it centered, and re-tighten the fixing nut.



Ensure the Brake fixing nut is secured tightly. Failure to do this may cause the Brake assembly to dislodge from the fork.

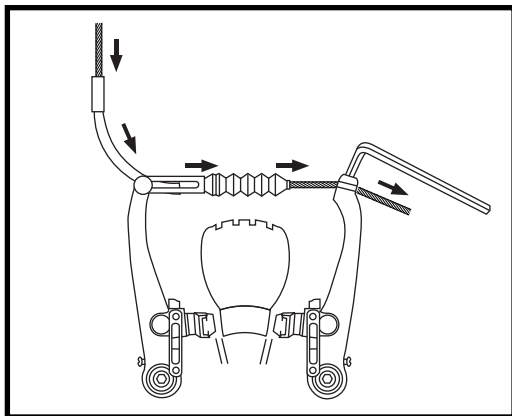


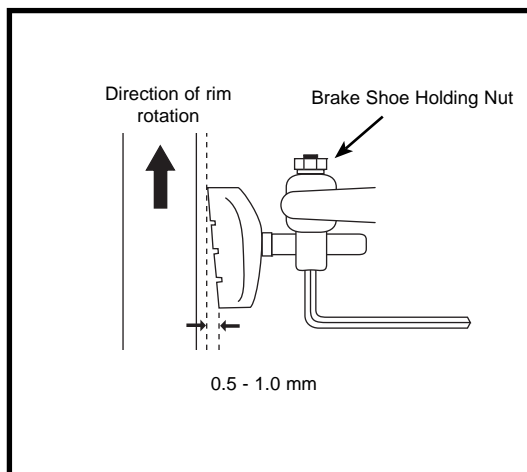
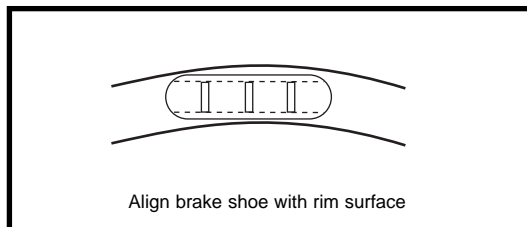
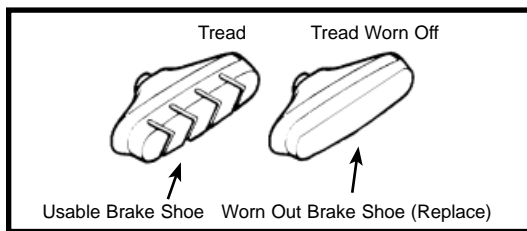
Some brakes have a special mechanism which enables you to set the clearance on either side of the rim using a screwdriver. Brake pads should finally be adjusted so that the leading edge of the pad makes first contact with the rim. Some brakes have special curved washers to allow this, but on less complex models it will be necessary to apply a little force to the pad and its mounting.

Adjustment - V-Style Brakes

Minor brake adjustment can be made via the barrel cable adjusters which are located on each brake lever. To adjust, squeeze the brake pads against the rim, loosen the lock nut, and turn the adjuster to pull the brake pads closer to, or spread them away from the rim as required.

Brake pad clearance should be a maximum 2mm from the rim. When correct, re-tighten the lock nut. If the pads cannot be set close enough to the rim in this manner, you may have to adjust the length of the brake cable by loosening the fixing bolt, then pulling or pushing the cable through the fixing bolt to adjust the length, and finally re-tightening the fixing bolt.

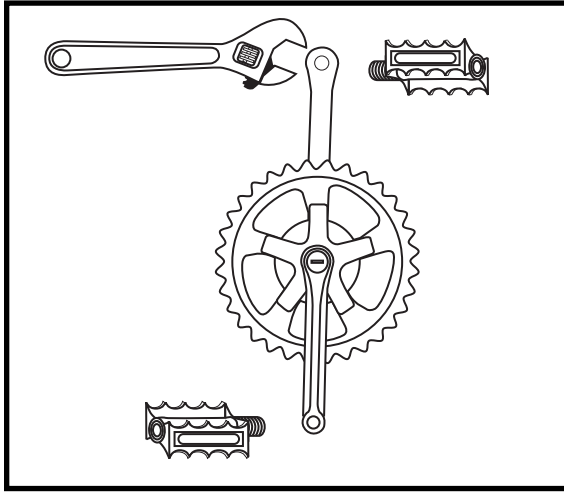




On some brakes, the main brake cable continues through the central cable carrier to an anchor bolt on one of the brake arms. Adjustment of the cable length is made after loosening the anchor bolt on the brake arm.

Adjust the brake pad position so that it is parallel to the wheel rim and so that the leading edge makes first contact. To do this, fit an Allen key into the brake pad holding bolt, loosen the fixing nut and adjust. Move the brake pad along its mounting post to alter the distance from the rim, and move the curved adjustment washer to alter the angle of the pad.

On some models there is a spring-force adjustment screw on the brake arm which allows further fine tuning of the brake shoe position.



DRIVETRAIN

The drivetrain of a bicycle refers to all parts that transmit power to the rear wheel including the pedals, chain, chainwheel, crank set and freewheel.

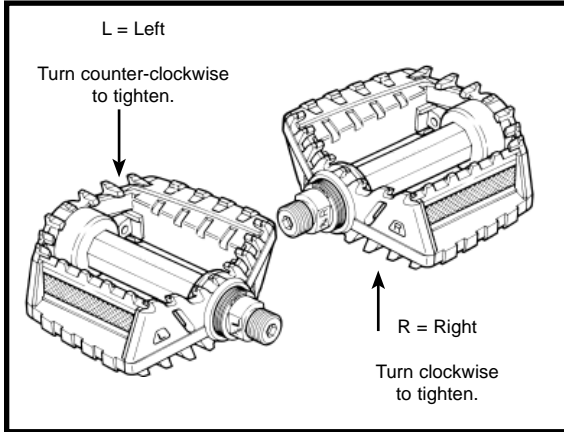
PEDALS

Pedals are available in a variety of shapes, sizes and materials, and each are designed with a particular purpose in mind. Some pedals can be fitted with toe clips and straps. These help to keep the feet correctly positioned and allow the rider to exert pulling force, as well as downward pressure, on the pedals. Use of toe clips with straps requires practice to acquire the necessary skill to operate them safely.

Inspection

Pedals should be inspected every month, taking note of the following areas:

- Check correct tightness into the crank arms. If pedals are allowed to become loose, they will not only be dangerous but will also cause irreparable damage to the cranks.
- Check that pedal bearings are properly adjusted. Move the pedals up and down, and right to left, and also rotate them by hand. If you detect any looseness or roughness in the pedal bearings then adjustment, lubrication or replacement is required.
- Ensure that the front and rear pedal reflectors are clean and securely fitted.
- Also ensure that the toe clips, if fitted, are securely tightened to the pedals.



Never ride with loose pedals.

Lubrication and Adjustment

Many pedals cannot be disassembled to allow access to the internal bearings and axle. However, it is usually possible to inject a little oil onto the inside bearings, and this should be done every six months. If the pedal is the type that can be fully disassembled, then the bearings should be removed, cleaned and greased every six to twelve months. Because of the wide variety of pedal types and their internal complexity, disassembly procedures are beyond the scope of this manual and further assistance should be sought from a specialist.



Never ride in traffic with fully tightened toe straps.

Attachment

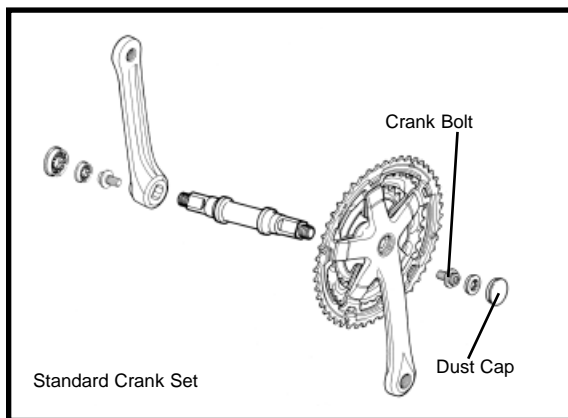
Note: The right and left pedals of a bicycle each have a different thread and are not interchangeable.

Never force a pedal into the incorrect crank arm. The right pedal, which attaches to the chainwheel side, is marked 'R' on the end of the axle, and screws in with a clockwise thread. The left pedal, which attaches to the other crank arm, is marked 'L' on the axle, and screws in with a counter-clockwise thread.

Insert the correct pedal into the crank arm and begin to turn the thread with your fingers only. When the axle is screwed all the way in, securely tighten using a 15mm wrench.

If removing a pedal, remember that the right pedal axle must be turned counter clockwise, i.e. the reverse of when fitting. If replacing the original pedals with a new set, make sure the size and the axle thread is compatible with the cranks on your bicycle. Bicycles use one of two types of cranks and these use different axle threads. Your bike may be equipped with cranks that are a one piece design with no separate axle. These operate with pedals that have a 1/2" (12.7mm) thread. Bikes equipped with three piece crank sets with a separate axle, left crank and right crank, use a slightly larger 9/16" (14mm) thread.

Note: Never try and force a pedal with the wrong thread size into a bicycle crank.



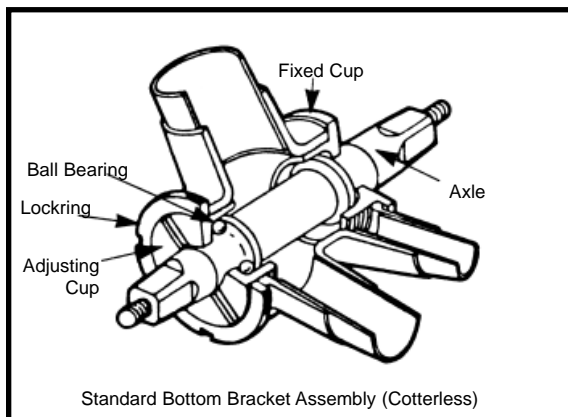
CRANK SET

The crank set refers to the bottom bracket axle and bearings, the crank arms, and chainrings.

Your bike may be fitted with either a one piece crank, where the crank arms and bottom bracket are a single component, or a standard crank set, where each crank arm bolts onto the bottom bracket axle using nuts or bolts. The one piece system is simpler and requires less maintenance, while the standard crank system requires a little extra care.



Never ride your bike if the cranks are loose. This may be dangerous and will damage the crank arms beyond repair.



Inspection

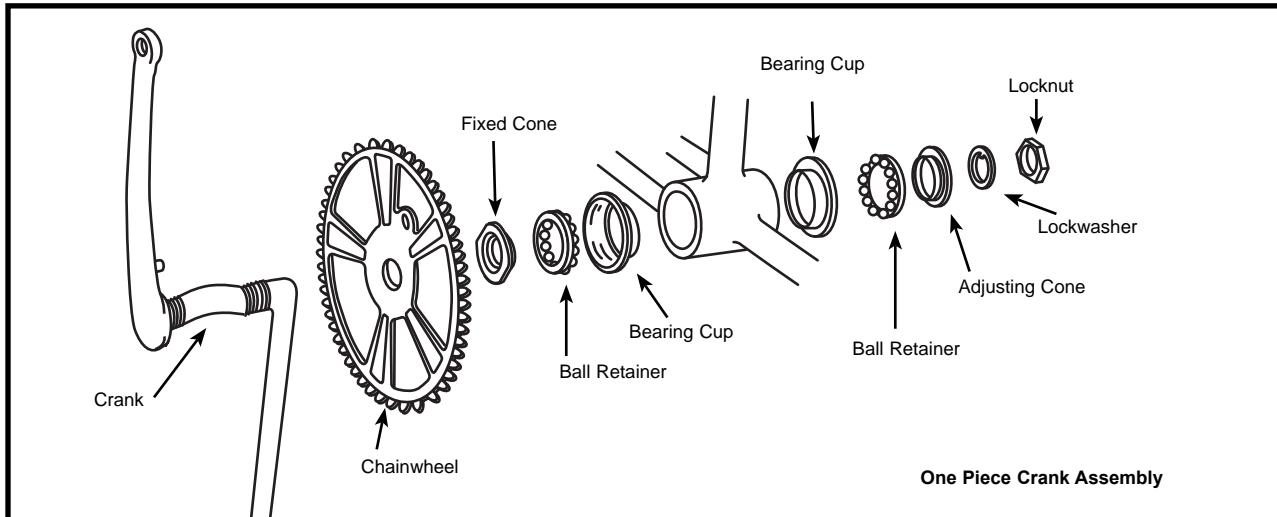
The crank set should be checked for correct adjustment and tightness every month. Crank nuts must be kept tight, and the bottom bracket bearings must be properly adjusted. Remove the chain and try to move the cranks from side to side with your hands. The cranks should not move on the axle, and there should be only very slight movement in the bottom bracket. Next, spin the cranks. If they don't spin freely without grinding noise, then adjustment or lubrication will be needed. Also check that there are no broken teeth on the chainrings, and wipe off excess dirt and grease that may have built up on them.

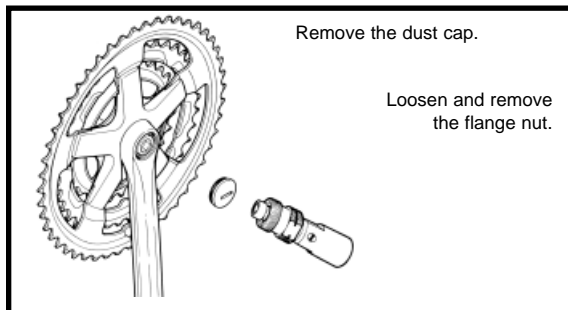
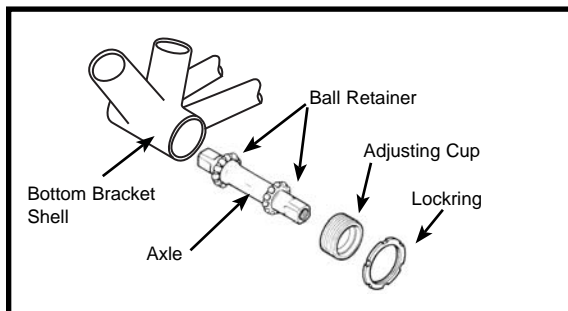
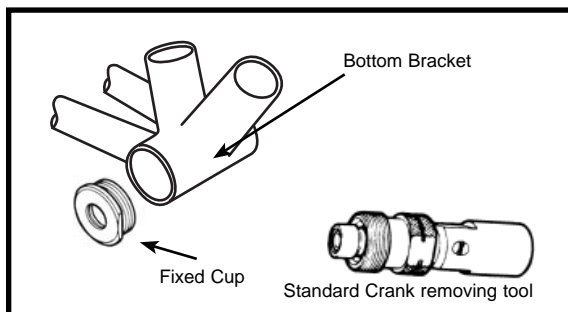
Lubrication and Adjustment - One Piece Cranks

To adjust the free play in a one piece type bottom bracket, loosen the locknut on the left side by turning it clockwise and tighten the adjusting cone counter-clockwise using a screwdriver in the slot. When correctly adjusted, re-tighten the locknut counter-clockwise.

To disassemble:

1. Remove the chain from the chainwheel.
 2. Remove the left pedal by turning the spindle clockwise.
 3. Remove the left side locknut by turning it clockwise and remove the keyed lockwasher.
 4. Remove the adjusting cone by turning it clockwise with a screwdriver.
 5. Remove the left ball retainer, slide the crank assembly out of the frame to the right, and remove the right ball retainer.
- Clean and inspect all bearing surfaces and ball retainers, and replace any damaged parts. Pack the ball bearing retainers with grease, then re-assemble in the reverse of the above procedure.





Lubrication and Adjustment

- Standard Cranks

To adjust the free play in a three piece type bottom bracket, loosen the locking on the left side by turning it counter-clockwise, then turn the adjusting cup as required. Re-tighten the locking taking care not to alter the cup adjustment.

To disassemble:

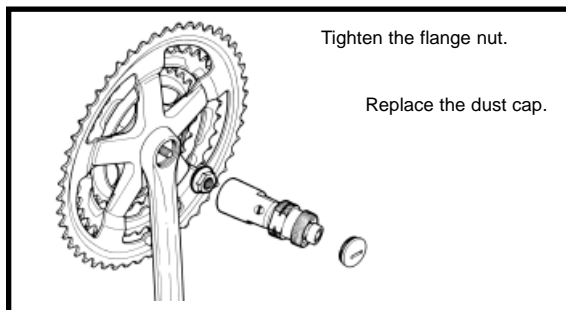
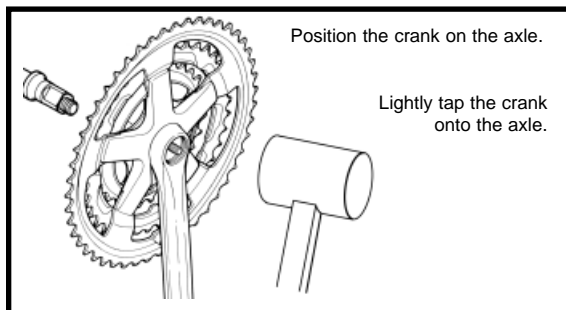
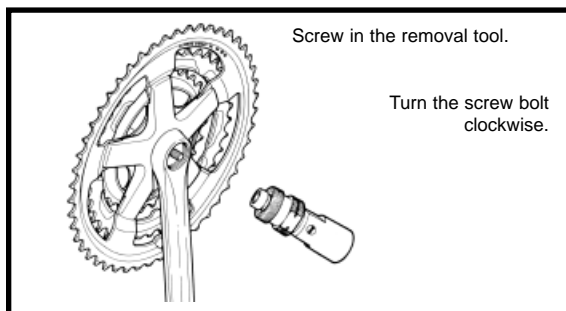
1. Remove the cranks from the axle.
2. Remove the left side locking by turning it counter-clockwise.
3. Remove the adjusting cup by turning it counter-clockwise.
4. Remove the left ball retainer and slide the axle out of the frame to the left.
5. Remove the right side fixed cup by turning it counter-clockwise and remove the right ball retainer. Clean and inspect all bearing surfaces and ball retainers, and replace any damaged parts. Pack the ball bearing retainers with grease, then re-assemble in reverse of the above procedure.

Standard Crank Removal

To remove cotterless cranks use the following procedure.

Note that a special tool will be required.

1. Remove the dust cap with a coin or screwdriver.
2. Loosen the flange nut or bolt and washer, and remove.
3. Screw the removing tool into the crank and tighten.
4. Turn the screw bolt down until the crank comes away from the axle.



Standard Crank Replacement:

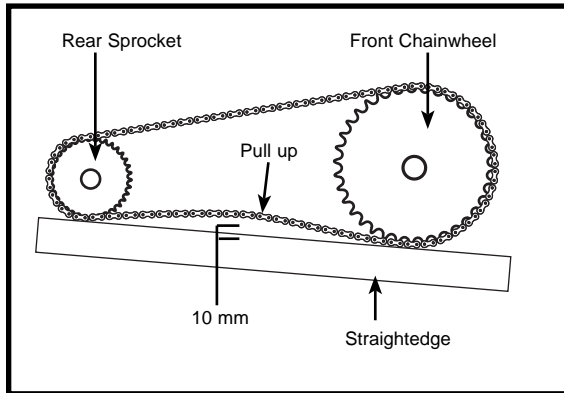
1. Replace the crank arm onto the axle.
2. Tap the crank arm lightly with a mallet.
3. Refit the washer and tighten flange nut or bolt securely to a torque of 27Nm.
4. Replace the dust cover

Adjustment After Use:

1. Remove dust cap.
2. Tap the crank arm lightly with a mallet.
3. Re-tighten the flange nuts, and refit the dust caps.



New cranks may become loose with initial use. Perform the following task after several hours of riding, and repeat it two or three times after further use. Cranks should then remain tight.



CHAINS

Inspection

The chain must be kept clean, rust free and frequently lubricated in order to extend its life as long as possible. It will require replacement if it stretches, breaks, or causes inefficient gear shifting. Make sure that there are no stiff links, they must all move freely.

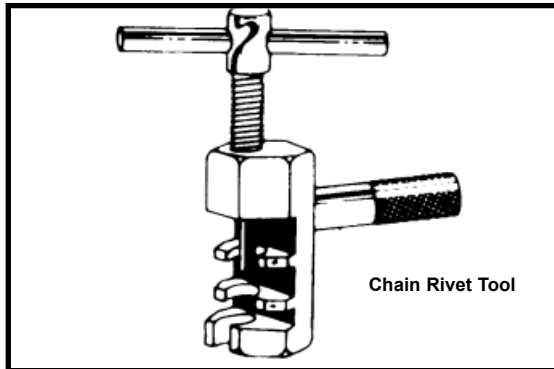
Lubrication

The chain (bicycle and motor drive) should be lubricated with light oil at least every month, or after use in wet, muddy, or dusty conditions. Take care to wipe off excess oil, and not to get oil on the tires or rim braking surfaces.

Adjustment and Replacement

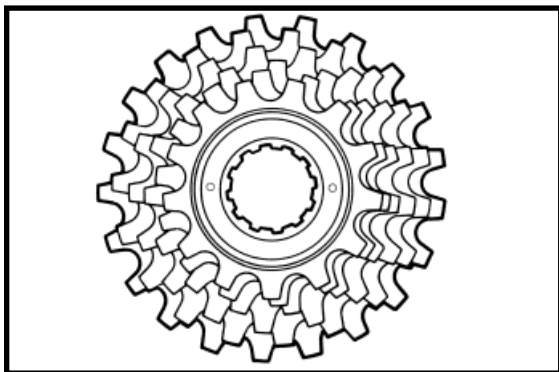
On derailleur geared bicycles the rear derailleur automatically tensions the chain. To adjust the chain on single speed freewheel, coaster hub braked or 3-speed hub geared bicycles:

1. Loosen the rear axle nuts (and coaster brake arm clip if fitted) and move the wheel forward to loosen, or backward to tighten, in the frame.
2. When correctly adjusted, the chain should have approximately 10mm (3/8") of vertical movement when checked in the center between the chainwheel and rear sprocket. Center the wheel in the frame and re-tighten the axle nuts after any adjustment. Bicycles which have a single speed freewheel, coaster hub brake or 3-speed hub, generally use a wider type chain than derailleur geared bicycles. These chains can be disconnected by way of a special U-shape joining link, that can be pried off of the master link with a screwdriver. To replace, feed the chain around the chainwheel and rear sprocket, fit the master link into the rollers into each end of the chain, position the master link side plate, and slip on the U-shaped snap-on plate. Make sure the open end of the U-shaped plate is trailing as the link approaches the chainwheel when pedaling forward.



Chain Rivet Tool

Derailleur geared bicycles use narrower chains and require a special tool to fit and remove chain links, or to change the length. To remove, fit the rivet tool so that the punch pin is centered over any one of the chain rivets. Push the rivet almost all the way out, then back out the punch and remove the tool. Holding the chain on both sides of the punched rivet, bend it slightly to release link from the rivet. To install, feed chain around chainwheel, rear sprocket and derailleur cage with rivet facing away from the bicycle. Bring the two ends together within the special tool and punch the rivet into place. Be sure not to push rivet too far through side plate.



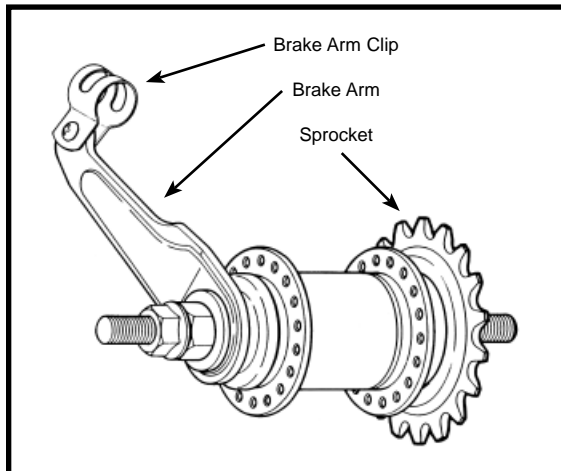
FREEWHEEL

Inspection

Like the chain, the freewheel must be kept clean and well lubricated. If the chain has become worn and needs replacing, then it is likely that the freewheel will also have become worn and should also be replaced. Take the chain off the freewheel and rotate it with your hand. If you hear a grinding noise or the freewheel stops suddenly after spinning it, it may need adjustment or replacement. Such action is beyond the scope of this manual and you should consult a specialist.

Lubrication

Remove any accumulated dirt from the freewheel with a brush and a degreaser. Disassembly of the freewheel is a complicated procedure requiring special tools, and should be left to a specialist. Apply oil to the freewheel whenever you lubricate the chain, taking care to wipe off any excess.



COASTER BRAKE HUB

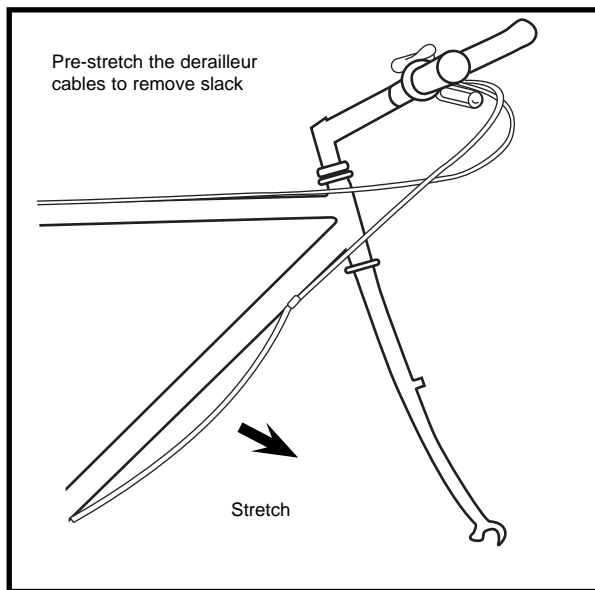
Many BMX style and other children's bicycles are fitted with a coaster hub brake in the rear wheel. This type of brake offers the advantages of reliability and easy operation. The brake is operated by applying back pedal pressure and allows the rider to 'coast' without pedaling, if desired. There are several models of coaster hubs available, and the internal mechanisms are very complex. They require infrequent attention as far as lubrication, adjustment or replacement of internal parts; if needed, this should be left to a specialist. Keep the coaster hub sprocket clean and oil it along with the chain.



Make sure the brake arm is correctly attached to the chainstay with the brake arm clip. The brake will not operate otherwise.

DERAILLEUR SYSTEMS

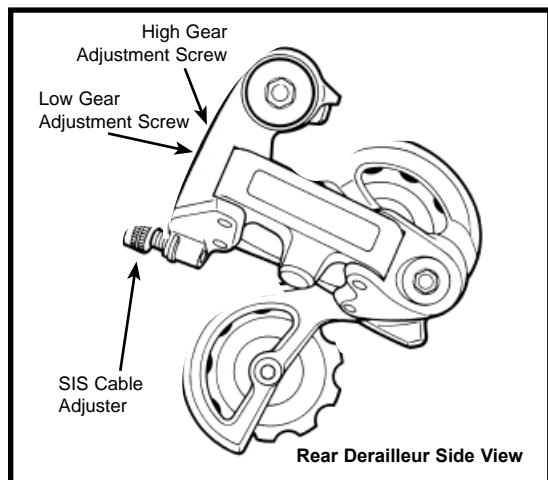
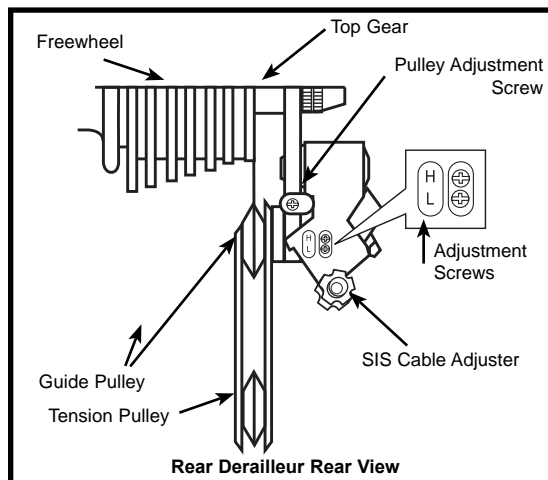
The derailleur system includes the front and rear derailleurs, the shift levers, and the derailleur control cables, all of which must function correctly for smooth gear shifting to occur. There are several different types of derailleur systems, but all operate using similar principles. Your new bicycle may be fitted with an “indexing” or “click” shifting system (SIS), which links each gear position to a positive click mechanism in the shifter, and makes shifting very simple and precise. A further development of SIS is the fully integrated system (STI) where the shift lever and brake lever mechanisms form an integrated unit on the handlebars.



Inspection

The operation of the derailleur system should be checked at least every month. Check the operation of the rear derailleur first, then the front. The rear derailleur should shift the chain cleanly from one cog to the next without hesitation. On SIS equipped bicycles, each notched position in the shifter must equate to a new gear position. After shifting, the rear derailleur should not rub on the chain. The derailleur should never cause the chain to fall off the inner or outer freewheel cogs.

The front derailleur should also shift the chain cleanly and without hesitation between each chainring. If your bicycle is equipped with front SIS, then each click or stop in the shifter should equate exactly to a new gear position. When the chain has been positioned onto a new chainring, it should not rub on the front derailleur. The chain should not fall off a chainring at any time. Derailleur control cables are a critical component that must be well maintained for accurate shifting performance. Check them for any sign of rust, fraying, kinks, broken strands and any damage to the cable housing. If you find any problems, the cables may need replacing before you ride.



Lubrication

All the pivoting points of the front and rear derailleurs should be lubricated with light oil at least every month. Be sure to wipe off any excess oil to prevent attraction of dirt into the mechanisms. The shifting cables should be cleaned and re-coated with a thin layer of grease every six months, or whenever new cables are being installed.

Adjustment - Rear Derailleur

The Low limit screw determines how far the rear derailleur will travel toward the wheel of the bicycle, while the High limit screw determines how far the cage will travel toward the frame.

1. Shift the rear shifter to the largest number indicated, disconnect the rear derailleur cable from the cable anchor bolt and place the chain on the smallest sprocket.
2. Adjust the High limit screw so the chain and the smallest sprocket are lined up vertically. Remove any slack in the cable by pulling it taut, then re-connect the cable and tighten the cable anchor bolt securely.
3. Shift up through the gears making sure that each gear is achieved quietly and without hesitation. If noise occurs, use the barrel adjuster to fine-tune the cable tension. Turning the barrel adjuster **clockwise** will decrease cable tension and allow the derailleur cage to move farther away from the bicycle in small increments. Turning **counter-clockwise** will increase cable tension and bring the cage closer to the bicycle. This will micro-adjust the positioning of the derailleur cage in relation to the freewheel. Simply put; turn the barrel adjuster the direction you want the chain to go.
4. Shift the chain onto the largest sprocket; adjust the low limit screw so the chain and the largest cog are lined up vertically. If you are unable to get the chain to the largest cog, turning the Low limit screw counter-clockwise will enable the chain to move towards the wheel.
5. Shift through the gears ensuring each gear is achieved quietly and without hesitation.

NOTE: It may take several adjustments to achieve the desired positioning. Please refer to the troubleshooting section for more assistance.

Problem	Possible Cause	Remedy
Gear shifts not working properly	<ul style="list-style-type: none"> - Derailleur cables sticking/stretched/damaged - Front or rear derailleur not adjusted properly - Indexed shifting not adjusted properly 	<ul style="list-style-type: none"> - Lubricate/tighten/replace cables - Adjust derailleurs - Adjust indexing
Slipping chain	<ul style="list-style-type: none"> - Excessively worn/chipped chainring or freewheel sprocket teeth - Chain worn/stretched - Stiff link in chain - Non compatible chain/chainring/freewheel 	<ul style="list-style-type: none"> - Replace chainring, sprockets and chain - Replace chain - Lubricate or replace link - Seek advice at a bicycle shop
Chain jumping off freewheel sprocket or chainring	<ul style="list-style-type: none"> - Chainring out of true - Chainring loose - Chainring teeth bent or broken - Rear or front derailleur side-to-side travel out of adjustment 	<ul style="list-style-type: none"> - Re-true if possible, or replace - Tighten mounting bolts - Repair or replace chainring/set - Adjust derailleur travel
Constant clicking noises when pedaling	<ul style="list-style-type: none"> - Stiff chain link - Loose pedal axle/bearings - Loose bottom bracket axle/bearings - Bent bottom bracket or pedal axle - Loose crankset 	<ul style="list-style-type: none"> - Lubricate chain / Adjust chain link - Adjust bearings/axle nut - Adjust bottom bracket - Replace bottom bracket axle or pedals - Tighten crank bolts
Grinding noise when pedaling	<ul style="list-style-type: none"> - Pedal bearings too tight - Bottom bracket bearings too tight - Chain fouling derailleurs - Derailleur jockey wheels dirty/binding 	<ul style="list-style-type: none"> - Adjust bearings - Adjust bearings - Adjust chain line - Clean and lubricate jockey wheels

Problem	Possible Cause	Remedy
Freewheel does not rotate	<ul style="list-style-type: none"> - Freewheel internal pawl pins are jammed 	<ul style="list-style-type: none"> - Lubricate. If problem persists, replace freewheel
Brakes not working effectively	<ul style="list-style-type: none"> - Brake blocks worn down - Brake blocks/rim greasy, wet or dirty - Brake cables are binding/stretched/damaged - Brake levers are binding - Brakes out of adjustment 	<ul style="list-style-type: none"> - Replace brake blocks - Clean blocks and rim - Clean/adjust/replace cables - Adjust brake levers - Center brakes
When applying the brakes they squeal/squeak	<ul style="list-style-type: none"> - Brake blocks worn down - Brake block toe-in incorrect - Brake blocks/rim dirty or wet - Brake arms loose 	<ul style="list-style-type: none"> - Replace blocks - Correct block toe-in - Clean blocks and rim - Tighten mounting bolts
Knocking or shuddering when applying brakes	<ul style="list-style-type: none"> - Bulge in the rim or rim out of true - Brake mounting bolts loose - Brakes out of adjustment - Fork loose in head tube 	<ul style="list-style-type: none"> - True wheel or take to a bike shop for repair - Tighten bolts - Center brakes and/or adjust brake block toe-in - Tighten headset
Wobbling wheel	<ul style="list-style-type: none"> - Axle broken - Wheel out of true - Hub comes loose - Headset binding - Hub bearings collapsed - QR mechanism loose 	<ul style="list-style-type: none"> - Replace axle - True wheel - Adjust hub bearings - Adjust headset - Replace bearings - Adjust QR mechanism

Problem	Possible Cause	Remedy
Steering not accurate	<ul style="list-style-type: none"> - Wheels not aligned in frame - Headset loose or binding - Front forks or frame bent 	<ul style="list-style-type: none"> - Align wheels correctly - Adjust/tighten headset - Take bike to a bike shop for possible frame realignment
Frequent punctures	<ul style="list-style-type: none"> - Inner tube old or faulty - Tire tread/casing worn - Tire unsuited to rim - Tire not checked after previous puncture - Tire pressure too low - Spoke protruding into rim 	<ul style="list-style-type: none"> - Replace Inner tube - Replace tire - Replace with correct tire - Remove sharp object embedded in tire - Correct tire pressure - File down spoke

PROBLEM	POSSIBLE CAUSE	REMEDY
Bicycle has reduced range and/or speed	Low batteries Faulty batteries Low tire pressure Brakes dragging against rim Riding in hilly terrain, headwind, etc.	Charge batteries for recommended time Replace batteries Inflate tires to recommended pressure Adjust brakes and/or rim Reduced range to be expected in these types of terrain and/or weather conditions
Hub motor (Enlightened Series) makes a "clicking" noise and has reduce power and/or shuts off	Low batteries Damaged planetary gears	Charge batteries for recommended time Replace hub motor/wheel
No power when the switch is turned "ON"	Blown fuse Loose connectors Broke wire Faulty switch Faulty controller	Replace fuse Check all connectors Inspect all wires for damage Replace switch and retest Replace controller and retest
Bicycle operates OK but battery gauge does not light up	Loose connectors Damaged wires Faulty battery gauge	Check throttle and/or battery gauge connectors Inspect all wires Replace battery gauge
Battery gauge lights up but bicycle does not operate	Faulty brake inhibitor Loose motor wire connector Faulty PTS sensor (Enlightened Series) Faulty TTM sensor (Enlightened Series)	Replace brake inhibitor(s) and retest Check motor wire connector Replace PTS sensor and retest Replace TTM sensor and retest

PROBLEM	POSSIBLE CAUSE	REMEDY
Bicycle runs at full speed without pedaling	Faulty PTS sensor (Enlightened Series)	Replace PTS sensor and retest
	Faulty TTM sensor (Enlightened Series)	Replace TTM sensor and retest
	Faulty throttle	Replace throttle and retest
	Faulty controller	Replace controller and retest
Bicycle (RMB or STB Series) works in TAG mode but not in PAS mode	Sensor and sensor ring not aligned	Realigned so gap between sensor and sensor ring is 1-2mm
	Faulty "White Box"	Replace "White Box" and retest
Battery indicates full charge when tested at the charger port but bicycle does not operate	Blown fuse	Replace fuse
	Loose connectors	Check all connectors
	Poor contact between battery terminals	Inspect and clean battery terminals
Throttle (on bicycles so equipped) does not spring back to neutral position	Grip jammed against throttle	Reposition grip so gap between it and the throttle is 1-2mm
	Faulty throttle	Replace throttle
Bicycle has intermittent power	Loose connectors	Check all connectors
	Loose fuse	Check fuse connector
	Damaged wires	Inspect all wires
Charger shows a full charge in an unusually short amount of time	Faulty charger	Replace charger
	Faulty batteries	Replace batteries
Indicator light on charger not illuminated when charger is plugged into outlet	Outlet has no power	Check outlet for power
	Blown fuse (NiMH and Li-Ion chargers)	Replace fuse
	Faulty charger	Replace charger
Charger (NiMH and Li-Ion) indicator light only flashes orange and never changes to red	Damage wire from charger port to battery	Inspect wire
	Faulty batteries	Replace batteries



FULLY CHARGE BATTERIES BEFORE FIRST USE - Batteries should be fully charged immediately when they are received and immediately after each use for the recommended charge times (see below).

- Li-Ion (Lithium Ion) batteries 4-6 hours

With proper care and maintenance your American Cycle Company® Electric Bicycle will provide ease of use and be fun to ride. Refer to the inside front cover for points that will help you to maximize the enjoyment you get from your new hybrid electric bicycle.

AMERICAN CYCLE COMPANY

web: www.americancycle.bike email: info@americancycle.bike